Site & Dioxin data (GAIQCdatais in file room)

(Copy)
SUMMARY REPORT

IONICS INTERNATIONAL PROJECT 95-265 CLIENT PROJECT 8168

Client ID	Ionics ID	File name
Method Blank	DFBLK B1-6-14	F11445
Lab Spike	LS B1-6-14	F11446
Lab Spike Duplicate	LSD B1-6-14	F11442
QA-1	3-65-1	F11447
QA-2	3-65-2	F11448
QA-3	3-65-3	F11451
QA-4	3-65-4	F11452
QA-5	3-65-5	F11414
QA-6	3-65-6	F11415
QA-7	3-65-7	F11416
QA-8	3-65-8	F11417
QA-9	3-65-9	F11418
QA-10	3-65-10	F11429
WA-1	3-65-11	F11453
WA-2	3 - 65-12	F11430
WA-3	3-65-13	F11422
WA-4	3-65-14	F11423
WP-1	3-65-15	F11431
DA-1	3 <i>-</i> 65-16	F11427
DA-3	3 <i>-</i> 65-17	F11428

Stephen R. Missler, Ph.D.

Lab Manager

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: QA-1

SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-265 Ionics Sample: 3-65-1

Phone: (713) 972-1037

Specific analytes	Sample		Blank	Lab spike			
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits	
2,3,7,8-TCDD	ND	0.01	ND	2.50	100%	50-150	
1,2,3,7,8-PeCDD	ND	0.01	ND	7.08	113%	50-150	
1,2,3,4,7,8-HxCDD	7.16	0.33	ND	ND	•	•	
1,2,3,6,7,8-HxCDD	35.89	0.35	ND	6.79	109%	50-150	
1,2,3,7,8,9-HxCDD	9.55	0.34	ND	ND	-	•	
1,2,3,4,6,7,8-HpCDD	864.86	0.30	ND	6.42	103%	50-150	
OCDD	26183.49	5.80	ND	11.46	92%	50-150	
2,3,7,8-TCDF	1.93	0.11	ND	2.81	112%	50-150	
1,2,3,7,8-PeCDF	2.65	0.02	ND	7.40	118%	50-150	
2,3,4,7,8-PeCDF	3.83	0.02	ND	ND	•	•	
1,2,3,4,7,8-HxCDF	68.72	1.13	ND	ND	•	•	
1,2,3,6,7,8-HxCDF	26.09	1.09	ND	6.35	102%	50-150	
2,3,4,6,7,8-HxCDF	18.74	1.27	ND	ND	•	•	
1,2,3,7,8,9-HxCDF	12.93	1.41	ND	ND	-	•	
1,2,3,4,6,7,8-HpCDF	509.26	1.75	ND	6.44	103%	50-150	
1,2,3,4,7,8,9-HpCDF	53.49	2.08	ND	ND	-	-	
OCDF	13559.65	5.83	ND	10.70	86%	50-150	

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TODO		ND	0.04	Taket disedus Monaya
TOTAL TODD	0	ND	0.01	Total dioxins/furans
TOTAL PeCDD	2	0.36	0.01	
TOTAL HXCDD	5	168.03	0.35	44974.25 ppb
TOTAL HPCDD	2	1641.37	0.30	
TOTAL TCDF	7	5.48	0.11	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	7	31.89	0.02	•
TOTAL HXCDF	8	685.77	1.41	74.17 ppb
TOTAL HpCDF	4	2698.20	2.08	• •

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: QA-2 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-265 Ionics Sample: 3-65-2

Phone: (713) 972-1037

Specific analytes	Sam	Sample			Lab spike	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.01	ND ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.04	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	1.77	0.22	ND	ND	€	-
1,2,3,6,7,8-HxCDD	8.99	0.23	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	3.45	0.22	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	217.04	0.15	ND	6.42	103%	50-150
OCDD	5630.09	2.09	ND	11.46	92%	50-150
2,3,7,8-TCDF	1.65	0.02	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	2.49	0.02	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.03	ND	ND	-	-
1,2,3,4,7,8-HxCDF	26.98	0.28	ND	ND	-	-
1,2,3,6,7,8-HxCDF	4.36	0.27	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	2.58	0.32	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.35	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	120.60	0.20	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	10.21	0.23	ND	ND	-	-
OCDF	935.43	1.62	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TODD	0	ND	0.01	Total dioxins/furans
TOTAL PeCDD	0	ND	0.04	
TOTAL HXCDD	5	53.04	0.23	7843.64 ppb
TOTAL HPCDD	2	463.90	0.15	
TOTAL TCDF	3	2.78	0.02	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	8	18.80	0.03	
TOTAL HXCDF	8	214.66	0.35	15.146 ppb
TOTAL HpCDF	4	524.95	0.23	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: QA-3 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-265 Ionics Sample: 3-65-3

Phone: (713) 972-1037

Specific analytes	San	ple	Blank		Lab spike	
-	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.02	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.07	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	0.95	0.11	ND	ND	ξ	-
1,2,3,6,7,8-HxCDD	3.85	0.11	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	2.31	0.11	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	87.76	0.09	ND	6.42	103%	50-150
OCDD	2293.87	0.35	ND	11.46	92%	50-150
0.07.07005		0.00	l ND	0.04	4.400/	E0 4E0
2,3,7,8-TCDF	0.30	0.03	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.03	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.03	ND ND	ND ND	-	-
1,2,3,4,7,8-HxCDF	2.65	0.61	ND	ND	-	•
1,2,3,6,7,8-HxCDF	1.48	0.59	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	1.25	0.69	ND	ND	-	•
1,2,3,7,8,9-HxCDF	ND	0.76	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	52.36	0.65	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	1.98	0.77	ND	ND	-	-
OCDF	319.89	0.27	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD TOTAL PeCDD	1 0	0.18 ND	0.02 0.07	Total dioxins/furans
TOTAL HXCDD TOTAL HXCDD	6 2	34.84 290.60	0.07 0.11 0.09	3298.66 ppb
TOTAL TODE	5	1.27	0.03	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF TOTAL HxCDF TOTAL HpCDF	4 7 3	7.44 93.25 257.32	0.03 0.76 0.77	5.315 ppb
		207.02	0.77	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: QA-4 SAMPLE ANALYSIS SUMMARY REPORT Lab Project: 95-265 Lab Sample: 3-65-4

Phone: (713) 972-1037

Specific analytes	Sam	ple	Blank		Lab spike	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
	1					
2,3,7,8-TCDD	ND	0.04	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	80.0	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	0.63	0.18	ND	ND	ξ.	50-150
1,2,3,6,7,8-HxCDD	2.41	0.18	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	1.74	0.18	ND	ND	-	50-150
1,2,3,4,6,7,8-HpCDD	59.84	0.14	ND	6.42	103%	50-150
OCDD	1465.50	1.31	ND	11.46	92%	50-150
			•			
2,3,7,8-TCDF	0.23	0.04	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.05	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.05	ND	ND	•	50-150
1,2,3,4,7,8-HxCDF	2.02	0.23	ND	ND	-	50-150
1,2,3,6,7,8-HxCDF	1.31	0.23	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	1.00	0.26	ND	ND	-	50-150
1,2,3,7,8,9-HxCDF	ND	0.29	ND	ND	-	50-150
1,2,3,4,6,7,8-HpCDF	36.08	0.40	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	1.57	0.48	ND	ND	-	50-150
OCDF	206.24	0.69	ND	10.70	86%	50-150

		Number	Total analytes*
0.04	ND	0	TOTAL TCDD TOTAL PeCDD
0.08 0.18 0.14	24.25 198.32	5 2	TOTAL HXCDD TOTAL HXCDD
0.04	1.41	6	TOTAL TCDF
0.29	4.96 74.66 185.05	7	TOTAL PeCDF TOTAL HxCDF TOTAL HpCDF
0.08 0.18 0.14 0.04 0.05	D .25 :.32 41 96 .66	N 24. 198 1.4 4.9	0 N 5 24. 2 198 6 1. 4 4. 7 74.

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: QA-5

SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-265 Ionics Sample: 3-65-5

Specific analytes	Sam	Sample			Lab spike	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.03	ND ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.19	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	0.71	0.19	ND	ND	ζ-	•
1,2,3,6,7,8-HxCDD	2.89	0.20	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	2.03	0.19	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	88.08	0.18	ND	6.42	103%	50-150
OCDD	1436.28	0.56	ND	11.46	92%	50-150
2,3,7,8-TCDF	0.18	0.06	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.11	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	0.25	0.12	ND	ND	-	•
1,2,3,4,7,8-HxCDF	1.69	0.16	ND	ND	-	-
1,2,3,6,7,8-HxCDF	0.80	0.15	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	0.63	0.18	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.20	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	35.24	0.44	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	1.92	0.52	ND	ND	-	-
OCDF	211.02	0.30	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
				· · · · · · · · · · · · · · · · · · ·
TOTAL TODD	1	0.12	0.03	Total dioxins/furans
TOTAL PeCDD	1	0.27	0.19	
TOTAL HXCDD	5	19.38	0.20	2481.77 ppb
TOTAL HPCDD	2	193.66	0.18	
TOTAL TCDF	6	0.97	0.06	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	7	5.35	0.12	-
TOTAL HXCDF	8	463.62	0.20	3.917 ppb
TOTAL HPCDF	4	151.10	0.52	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

IONICS INTERNATIONAL, INC.

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Phone: (713) 972-1037 Fax: (713) 784-1152

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: QA-6

SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-265 Ionics Sample: 3-65-6

Phone: (713) 972-1037

Specific analytes	Sample		Blank	Lab spike			
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits	
				_			
2,3,7,8-TCDD	ND	0.03	ND	2.50	100%	50-150	
1,2,3,7,8-PeCDD	ND	0.21	ND	7.08	113%	50-150	
1,2,3,4,7,8-HxCDD	0.36	0.15	ND	ND	€	-	
1,2,3,6,7,8-HxCDD	2.18	0.16	ND	6.79	109%	50-150	
1,2,3,7,8,9-HxCDD	1.12	0.16	ND	ND	-	-	
1,2,3,4,6,7,8-HpCDD	61.42	0.17	ND	6.42	103%	50-150	
OCDD	1131.63	1.05	ND	11.46	92%	50-150	
2,3,7,8-TCDF	0.15	0.04	ND	2.81	112%	50-150	
1,2,3,7,8-PeCDF	ND	0.10	ND	7.40	118%	50-150	
2,3,4,7,8-PeCDF	ND	0.11	ND	ND	-	-	
1,2,3,4,7,8-HxCDF	1.09	0.15	ND	ND	•	-	
1,2,3,6,7,8-HxCDF	0.74	0.15	ND	6.35	102%	50-150	
2,3,4,6,7,8-HxCDF	0.43	0.17	ND '	ND	_	-	
1,2,3,7,8,9-HxCDF	ND	0.19	ND	ND	-	-	
1,2,3,4,6,7,8-HpCDF	24.87	0.36	ND	6.44	103%	50-150	
1,2,3,4,7,8,9-HpCDF	ND 3	0.43	ND	ND	-	•	
OCDF	167.07	0.49	ND	10.70	86%	50-150	

	DL (ppb)	Conc (ppb)	Number	Total analytes*
Total dioxins/furans	0.03	0.10	1	TOTAL TCDD
	0.21	0.16	1	TOTAL PeCDD
1581.43 ppb	0.16	14.22	6	TOTAL HXCDD
	0.17	134.25	2	TOTAL HPCDD
2,3,7,8-TCDD toxicity equivalent	0.04	0.34	2	TOTAL TCDF
• •	0.11	1.93	2	TOTAL PeCDF
2.769 ppb	0.19	32.38	8	TOTAL HXCDF
• •	0.43	99.34	2	TOTAL HPCDF

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: QA-7 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-265 Ionics Sample: 3-65-7

Phone: (713) 972-1037

Sample		Blank	Lab spike			
Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits	
	2.25			4000/	50.450	
					50-150	
ND ND	0.11	ND ND	7.08	113%	50-150	
0.49	0.16	ND	ND	;	-	
1.93	0.17	ND	6.79	109%	50-150	
1.10	0.16	ND	ND	-	•	
48.63	0.11	ND	6.42	103%	50-150	
915.27	0.84	ND	11.46	92%	50-150	
0.21	0.09	ND	2.81	112%	50-150	
ND	0.04	ND	7.40	118%	50-150	
ND	0.05	ND	ND	-	-	
1.20	0.14	ND	ND	-	-	
0.75	0.14	ND	6.35	102%	50-150	
0.51	0.16	ND	ND	-	-	
ND	0.18	ND	ND	-	-	
23.28	0.30	ND	6.44	103%	50-150	
1.22	0.36	ND	ND	•	-	
119.34	0.86	ND	10.70	86%	50-150	
	Conc (ppb) ND ND 0.49 1.93 1.10 48.63 915.27 0.21 ND ND 1.20 0.75 0.51 ND 23.28 1.22	ND 0.05 ND 0.11 0.49 0.16 1.93 0.17 1.10 0.16 48.63 0.11 915.27 0.84 0.21 0.09 ND 0.04 ND 0.05 1.20 0.14 0.51 0.16 ND 0.18 23.28 0.30 1.22 0.36	Conc (ppb) DL (ppb) Conc (ppb) ND 0.05 ND ND 0.11 ND 0.49 0.16 ND 1.93 0.17 ND 1.10 0.16 ND 48.63 0.11 ND 915.27 0.84 ND ND 0.04 ND ND 0.05 ND 1.20 0.14 ND 0.51 0.16 ND ND 0.18 ND 23.28 0.30 ND 1.22 0.36 ND	Conc (ppb) DL (ppb) Conc (ppb) Conc (ppb) ND 0.05 ND 2.50 ND 0.11 ND 7.08 0.49 0.16 ND ND 1.93 0.17 ND 6.79 1.10 0.16 ND ND 48.63 0.11 ND 6.42 915.27 0.84 ND 11.46 0.21 0.09 ND 2.81 ND 0.04 ND 7.40 ND 0.05 ND ND 1.20 0.14 ND ND 0.51 0.16 ND ND ND 0.18 ND ND ND 0.18 ND ND 23.28 0.30 ND 6.44 1.22 0.36 ND ND	Conc (ppb) DL (ppb) Conc (ppb) Conc (ppb) Rec (%) ND 0.05 ND 2.50 100% ND 0.11 ND 7.08 113% 0.49 0.16 ND ND 2 1.93 0.17 ND 6.79 109% 1.10 0.16 ND ND - 48.63 0.11 ND 6.42 103% 915.27 0.84 ND 11.46 92% 0.21 0.09 ND 2.81 112% ND 0.04 ND 7.40 118% ND 0.05 ND ND - 1.20 0.14 ND ND - 0.75 0.14 ND 6.35 102% 0.51 0.16 ND ND - ND 0.18 ND ND - ND 0.18 ND ND - 0.22	

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TODD	1	0.20	0.05	Total dioxins/furans
TOTAL PeCDD	1	0.22	0.11	
TOTAL HXCDD	5	12.79	0.17	1285.39 ppb
TOTAL HPCDD	2	107.08	0.11	
TOTAL TCDF	2	0.50	0.09	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	4	3.81	0.05	* *
TOTAL HXCDF	8	35.92	0.18	2.384 ppb
TOTAL HpCDF	4	90.26	0.36	

^{*}Includes non-specific analytes, in addition to those, chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: QA-8 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-265 Ionics Sample: 3-65-8

Phone: (713) 972-1037

Specific analytes	San	nple	Blank		Lab spike	spike	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits	
2,3,7,8-TCDD	ND	0.11	ND	2.50	100%	50-150	
1,2,3,7,8-PeCDD	ND	0.15	ND	7.08	113%	50-150	
1,2,3,4,7,8-HxCDD	0.43	0.25	ND	ND	ξ.	-	
1,2,3,6,7,8-HxCDD	2.34	0.26	ND	6.79	109%	50-150	
1,2,3,7,8,9-HxCDD	0.89	0.26	ND	ND	-	-	
1,2,3,4,6,7,8-HpCDD	63.45	0.10	ND	6.42	103%	50-150	
OCDD	1272.54	0.82	ND	11.46	92%	50-150	
2,3,7,8-TCDF	ND	0.07	ND	2.81	112%	50-150	
1,2,3,7,8-PeCDF	ND	0.06	ND	7.40	118%	50-150	
2,3,4,7,8-PeCDF	ND	0.06	ND	ND	-	•	
1,2,3,4,7,8-HxCDF	1.30	0.19	ND	ND	-	-	
1,2,3,6,7,8-HxCDF	0.87	0.19	ND	6.35	102%	50-150	
2,3,4,6,7,8-HxCDF	0.49	0.22	ND	ND	-	-	
1,2,3,7,8,9-HxCDF	ND	0.24	ND	ND	-	-	
1,2,3,4,6,7,8-HpCDF	27.66	0.65	ND	6.44	103%	50-150	
1,2,3,4,7,8,9-HpCDF	1.43	0.77	ND	ND	-	-	
OCDF	182.47	0.66	ND	10.70	86%	50-150	

	DL (ppb)	Conc (ppb)	Number	Total analytes*
Total dioxins/furans	0.11	0.23	1	TOTAL TODD
	0.15	ND	0	TOTAL PeCDD
1781.67 ppb	0.26	13.17	5	TOTAL HXCDD
• •	0.10	135.46	2	TOTAL HPCDD
2,3,7,8-TCDD toxicity equivalent	0.07	ND	0	TOTAL TCDF
• •	0.06	2.54	3	TOTAL PeCDF
3.013 ppb	0.24	42.28	8	TOTAL HXCDF
••	0.77	132.98	4	TOTAL HPCDF

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: QA-9 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-265 Ionics Sample: 3-65-9

Phone: (713) 972-1037

Specific analytes	Sam	ple	Blank		Lab spike			
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits		
					4000	50 450		
2,3,7,8-TCDD	ND	0.03	ND	2.50	100%	50-150		
1,2,3,7,8-PeCDD	ND	0.16	ND	7.08	113%	50-150		
1,2,3,4,7,8-HxCDD	0.49	0.14	ND	ND	₹	-		
1,2,3,6,7,8-HxCDD	1.93	0.15	ND	6.79	109%	50-150		
1,2,3,7,8,9-HxCDD	1.35	0.15	ND	ND	-	-		
1,2,3,4,6,7,8-HpCDD	42.17	0.17	ND	6.42	103%	50-150		
OCDD	984.88	0.80	ND	11.46	92%	50-150		
2,3,7,8-TCDF	0.26	0.03	ND	2.81	112%	50-150		
1,2,3,7,8-PeCDF	ND	0.05	ND	7.40	118%	50-150		
2,3,4,7,8-PeCDF	ND	0.05	ND	ND	-	-		
1,2,3,4,7,8-HxCDF	1.68	0.21	ND	ND	-	-		
1,2,3,6,7,8-HxCDF	1.01	0.20	ND	6.35	102%	50-150		
2,3,4,6,7,8-HxCDF	0.59	0.23	ND	ND	-	•		
1,2,3,7,8,9-HxCDF	ND	0.26	ND	ND	-	-		
1,2,3,4,6,7,8-HpCDF	21.77	0.43	ND	6.44	103%	50-150		
1,2,3,4,7,8,9-HpCDF	0.96	0.51	ND	ND	-	-		
OCDF	118.49	0.55	ND	10.70	86%	50-150		

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TODD	1	0.32	0.03	Total dioxins/furans
TOTAL PeCDD	1	0.25	0.16	
TOTAL HXCDD	5	13.23	0.15	1346.94 ppb
TOTAL HpCDD	2	91.23	0.17	
TOTAL TCDF	1	0.26	0.03	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	3	3.18	0.05	•
TOTAL HxCDF	8	45.56	0.26	2.484 ppb
TOTAL HPCDF	4	89.54	0.51	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: QA-10 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-265 Ionics Sample: 3-65-10

Phone: (713) 972-1037

Specific analytes	Sam	ple	Blank		Lab spike	
······································	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.01	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.04	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	1.03	0.21	ND	ND	ξ.	-
1,2,3,6,7,8-HxCDD	4.05	0.22	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	2.18	0.22	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	58.54	0.12	ND	6.42	103%	50-150
OCDD	1654.21	2.06	ND	11.46	92%	50-150
2,3,7,8-TCDF	ND	0.04	ND ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.10	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.11	ND	ND	•	•
1,2,3,4,7,8-HxCDF	4.87	0.46	ND	ND	-	-
1,2,3,6,7,8-HxCDF	1.70	0.44	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	1.57	0.51	ND	ND	-	-
1,2,3,7,8,9-HxCDF	0.99	0.57	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	40.48	0.17	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	ND 🐪	0.20	ND	ND	-	-
OCDF	243.23	1.18	ND	10.70	86%	50-150
	1		1	i		

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TODD	2	1.36	0.01	Total dioxins/furans
TOTAL PeCDD	2	0.55	0.04	
TOTAL HXCDD	5	23.54	0.22	2262.76 ppb
TOTAL HPCDD	2	119.17	0.12	
TOTAL TCDF	4	2.18	0.04	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	4	8.19	0.11	
TOTAL HXCDF	5	46.79	0.57	4.526 ppb
TOTAL HpCDF	2	163.54	0.20	••

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: WA-1 SAMPLE ANALYSIS SUMMARY REPORT

Ionics Project: 95-265 Ionics Sample: 3-65-11

Phone: (713) 972-1037

Specific analytes	Sam	Sample			Lab spike	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.03	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	80.0	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	7.92	0.24	ND	ND		-
1,2,3,6,7,8-HxCDD	45.03	0.25	: ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	8.21	0.25	ND	ND	-	~
1,2,3,4,6,7,8-HpCDD	942.33	0.33	ND	6.42	103%	50-150
OCDD	27324.77	2.25	ND	11.46	92%	50-150
2,3,7,8-TCDF	1.15	0.04	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.04	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	0.92	0.02	ND	ND	-	50-150
1,2,3,4,7,8-HxCDF	26.81	0.35	ND	ND	_	_
1,2,3,6,7,8-HxCDF	9.45	0.33	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	6.55	0.39	ND	ND	10276	50-150
1,2,3,7,8,9-HxCDF	2.91	0.39	ND	ND	_	_
1,2,3,4,6,7,8-HpCDF	591.44	0.66	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	34.70	0.79	ND	ND	10070	30-130 -
OCDF	13672.30	1.44	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TODD	1	0.20	0.03	Total dioxins/furans
TOTAL PeCDD	0	ND	80.0	
TOTAL HXCDD	3	61.16	0.25	48318.43 ppb
TOTAL HPCDD	2	2774.81	0.33	
TOTAL TCDF	4	5.54	0.04	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	9	29.95	0.02	i
TOTAL HXCDF	9	868.10	0.44	67.945 ppb
TOTAL HPCDF	4	3581.60	0.79	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: WA-2

SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-265 Ionics Sample: 3-65-12

Phone: (713) 972-1037

Specific analytes	Sam	ple	Blank		Lab spike	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.06	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	0.74	0.11	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	4.78	0.35	ND	ND	ξ	-
1,2,3,6,7,8-HxCDD	20.72	0.36	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	8.16	0.36	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	491.45	0.24	ND	6.42	103%	50-150
OCDD	10579.19	3.10	ND	11.46	92%	50-150
	į					
2,3,7,8-TCDF	ND	0.06	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.13	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.14	ND	ND	-	•
1,2,3,4,7,8-HxCDF	7.11	0.61	ND	ND	-	-
1,2,3,6,7,8-HxCDF	6.10	0.59	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	10.00	0.69	ND	ND	-	•
1,2,3,7,8,9-HxCDF	ND	0.76	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	306.10	0.86	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	ND 🐪	1.02	ND	ND	•	-
OCDF	5556.74	3.05	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD TOTAL PeCDD	0	ND 1.34	0.06 0.11	Total dioxins/furans
TOTAL PEODD TOTAL HXCDD TOTAL HPCDD	6 2	131.25 1409.05	0.36 0.24	19574.55 ppb
TOTAL TCDF	1	3.93	0.06	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF TOTAL HxCDF TOTAL HpCDF	3 7 4	30.86 385.79 1476.39	0.14 0.76 1.02	30.167 ppb
	-			

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168
Client Sample: WA-3

SAMPLE ANALYSIS SUMMARY REPORT Lab Project: 95-265 Lab Sample: 3-65-13

Phone: (713) 972-1037

Specific analytes	Sam	ple	Blank		Lab spike	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.01	ND	2.50	100%	50-150
1,2,3, 7 ,8-PeCDD	ND	0.04	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	2.09	0.12	ND	ND	Ę	50-150
1,2,3,6,7,8-HxCDD	9.85	0.13	: ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	2.98	0.12	ND	ND	-	50-150
1,2,3,4,6,7,8-HpCDD	204.65	0.12	ND	6.42	103%	50-150
OCDD	5883.84	1.26	ND	11.46	92%	50-150
2,3,7,8-TCDF	0.53	0.01	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.02	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.02	ND	ND	-	50-150
1,2,3,4,7,8-HxCDF	9.92	0.16	ND	ND	-	50-150
1,2,3,6,7,8-HxCDF	5.42	0.15	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	2.93	0.18	ND	ND	-	50-150
1,2,3,7,8,9-HxCDF	ND	0.20	ND	ND	-	50-150
1,2,3,4,6,7,8-HpCDF	137.12	0.62	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	9.46	0.73	ND	ND	-	50-150
OCDF	1580.23	1.67	ND	10.70	86%	50-150

	DL (ppb)	Conc (ppb)	Number	Total analytes*
Total dioxins/furans	0.01	ND	0	TOTAL TCDD
	0.04	ND	0	TOTAL PeCDD
9189.2 ppb	0.13	74.48	6	TOTAL HXCDD
	0.12	632.49	2	TOTAL HPCDD
2,3,7,8-TCDD toxicity equivalent	0.01	2.44	3	TOTAL TCDF
•	0.02	13.28	8	TOTAL PeCDF
14.348 ppb	0.20	251.85	8	TOTAL HxCDF
••	0.73	750.59	4	TOTAL HpCDF

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: WA-4

SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-265 Ionics Sample: 3-65-14

Phone: (713) 972-1037

Specific analytes	Sam	ple	Blank			
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.01	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.03	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	1.24	0.03	ND	ND	11378	50-150
1,2,3,6,7,8-HxCDD	4.07	0.30	ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	1.97	0.29	ND	ND	-	•
1,2,3,4,6,7,8-HpCDD	69.25	0.11	ND	6.42	103%	50-150
OCDD	1641.75	1.23	ND	11.46	92%	50-150
0.07.0 TODE	0.40	0.04	110	0.04	4.400/	50.450
2,3,7,8-TCDF	0.19	0.01	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.01	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.01	ND	ND	-	-
1,2,3,4,7,8-HxCDF	2.62	0.68	ND	ND	-	-
1,2,3,6,7,8-HxCDF	3.82	0.66	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	ND	0.76	ND	ND	-	-
1,2,3,7,8,9-HxCDF	2.26	0.85	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	65.52	0.50	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	1.74	0.59	ND	ND	-	-
OCDF	252.71	0.91	ND	10.70	86%	50-150
				1		

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TODD	4	0.29	0.01	Total dioxins/furans
TOTAL PeCDD	5	1.04	0.03	
TOTAL HXCDD	5	37.81	0.30	2572.4 ppb
TOTAL HPCDD	2	220.07	0.11	
TOTAL TCDF	5	1.56	0.01	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	4	6.74	0.01	•
TOTAL HXCDF	6	140.69	0.85	4.877 ppb
TOTAL HpCDF	3	269.75	0.59	
<u> </u>				

^{*}Includes non-specific analytes, in addition to those, chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: WP-1 SAMPLE ANALYSIS SUMMARY REPORT Lab Project: 95-265 Lab Sample: 3-65-15

Phone: (713) 972-1037

Specific analytes	Sam	Sample		Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
				0.50	4000/	F0.450
2,3,7,8-TCDD	1.74	0.02	ND	2.50	100%	50-150
1,2,3,7,8-PeCDD	ND	0.03	ND	7.08	113%	50-150
1,2,3,4,7,8-HxCDD	70.10	0.28	ND	ND	ξ.	50-150
1,2,3,6,7,8-HxCDD	237.87	0.30	. ND	6.79	109%	50-150
1,2,3,7,8,9-HxCDD	122.76	0.29	ND	ND	-	50-150
1,2,3,4,6,7,8-HpCDD	2529.79	0.16	ND	6.42	103%	50-150
OCDD	19652.20	2.91	ND	11.46	92%	50-150
2,3,7,8-TCDF	2.49	0.07	ND	2.81	112%	50-150
1,2,3,7,8-PeCDF	ND	0.04	ND	7.40	118%	50-150
2,3,4,7,8-PeCDF	ND	0.04	ND	ND	-	50-150
1,2,3,4,7,8-HxCDF	84.52	1.04	ND	ND	-	50-150
1,2,3,6,7,8-HxCDF	31.10	1.01	ND	6.35	102%	50-150
2,3,4,6,7,8-HxCDF	32.87	1.18	ND	ND	-	50-150
1,2,3,7,8,9-HxCDF	12.48	1.30	ND	ND	-	50-150
1,2,3,4,6,7,8-HpCDF	1832.21	0.38	ND	6.44	103%	50-150
1,2,3,4,7,8,9-HpCDF	115.26	0.45	ND	ND	-	50-150
OCDF	18103.05	2.85	ND	10.70	86%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	
				•
TOTAL TODD	7	14.31	0.02	Total dioxins/furans
TOTAL PeCDD	11	59.89	0.03	
TOTAL HXCDD	7	1992.56	0.30	55675.11 ppb
TOTAL HPCDD	2	7222.58	0.16	
TOTAL TCDF	8	23.73	0.07	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	9	130.28	0.04	
TOTAL HXCDF	9	3834.16	0.00	143.685 ppb
TOTAL HpCDF	3	4642.35	0.45	• •

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: DA-1 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-265 Ionics Sample: 3-65-16

Phone: (713) 972-1037

ND ND ND ND ND ND ND ND 3.08	0.01 0.06 0.09 0.09 0.09	ND ND ND ND ND ND	2.50 7.08 ND 6.79	100% 113%	50-150 50-150 -
ND ND ND ND	0.06 0.09 0.09	ND ND	7.08 ND	113%	
ND ND ND ND	0.06 0.09 0.09	ND ND	7.08 ND	113%	
ND ND ND	0.09 0.09	ND	ND	;	50-150 -
ND ND	0.09	1	1	-	-
ND		· ND	6.79	4000/	
	0.09		J	109%	50-150
3.08		ND ND	ND	-	-
	0.04	ND	6.42	103%	50-150
36.55	0.07	ND	11.46	92%	50-150
0.05	0.02	ND	2.81	112%	50-150
ND	0.02	ND	7.40	118%	50-150
ND	0.02	ND	ND	-	_
0.06	0.05	ND	ND	•	-
ND	0.05	ND	6.35	102%	50-150
ND	0.05	ND	ND	-	-
ND	0.06	ND	ND	-	-
0.87	0.08	ND	6.44	103%	50-150
ND 🐪	0.10	ND	ND	-	•
4.03	0.06	ND	10.70	86%	50-150
	ND 0.06 ND ND ND ND 0.87 ND	ND 0.02 ND 0.02 0.06 0.05 ND 0.05 ND 0.05 ND 0.06 0.87 0.08 ND 0.10	ND 0.02 ND ND 0.02 ND 0.06 0.05 ND ND 0.05 ND ND 0.05 ND ND 0.06 ND 0.87 0.08 ND ND 0.10 ND	ND 0.02 ND 7.40 ND 0.02 ND ND 0.06 0.05 ND ND ND 0.05 ND ND ND 0.05 ND ND ND ND ND ND 0.87 0.08 ND 6.44 ND 0.10 ND ND	ND 0.02 ND 7.40 118% ND 0.02 ND ND - 0.06 0.05 ND ND - ND 0.05 ND ND 6.35 102% ND 0.05 ND ND - - ND 0.06 ND ND - - 0.87 0.08 ND 6.44 103% ND 0.10 ND ND -

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TODD	2	0.12	0.01	Total dioxins/furans
TOTAL PeCDD	0	ND	0.06	
TOTAL HXCDD	1	0.11	0.09	50.47 ppb
TOTAL HPCDD	2	5.47	0.04	
TOTAL TCDF	2	0.07	0.02	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	2	0.14	0.02	• •
TOTAL HXCDF	3	0.58	0.06	0.092 ppb
TOTAL HpCDF	2	3.39	0.10	••
•				

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: DA-3 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-265 Ionics Sample: 3-65-17

Phone: (713) 972-1037

Specific analytes	Sam	ple	Blank		Lab spike			
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits		
2,3,7,8-TCDD	ND	0.02	ND	2.50	100%	50-150		
1,2,3,7,8-PeCDD	ND ND	0.02	ND	7.08	113%	50-150		
1,2,3,4,7,8-HxCDD	ND	0.08	ND	ND	<	-		
1,2,3,6,7,8-HxCDD	ND	0.08	ND	6.79	109%	50-150		
1,2,3,7,8,9-HxCDD	ND	0.08	ND	ND	-	-		
1,2,3,4,6,7,8-HpCDD	2.86	0.03	ND	6.42	103%	50-150		
OCDD	30.45	0.10	ND	11.46	92%	50-150		
0 0 7 0 TODE	0.04	0.04	ND	0.04	4400/	50.450		
2,3,7,8-TCDF	0.04	0.01	ND	2.81	112%	50-150		
1,2,3,7,8-PeCDF	ND	0.02	ND ND	7.40	118%	50-150		
2,3,4,7,8-PeCDF	ND	0.02	ND ND	ND	-	•		
1,2,3,4,7,8-HxCDF	0.10	0.02	ND	ND	•	-		
1,2,3,6,7,8-HxCDF	ND	0.02	ND	6.35	102%	50-150		
2,3,4,6,7,8-HxCDF	ND	0.02	ND	ND	-	-		
1,2,3,7,8,9-HxCDF	ND ND	0.03	ND	ND	-	-		
1,2,3,4,6,7,8-HpCDF	1.11	0.08	ND	6.44	103%	50-150		
1,2,3,4,7,8,9-HpCDF	ND 🐪	0.10	ND	ND	-	•		
OCDF	3.87	0.11	ND	10.70	86%	50-150		
	<u> </u>							

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	1	0.12	0.02	Total dioxins/furans
TOTAL PeCDD	0	ND	0.02	
TOTAL HXCDD	1	0.38	0.08	44.34 ppb
TOTAL HPCDD	2	5.63	0.03	
TOTAL TODF	3	0.15	0.01	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	0	ND	0.02	
TOTAL HXCDF	2	0.37	0.03	0.088 ppb
TOTAL HPCDF	2	3.38	0.10	• •

^{*}Includes non-specific analytes, in addition to those, chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS REPORT

Client Project: 8168 SAMPLE ANALYSIS lonics Project: 95-265
Client Sample: QA-1 REPORT lonics Sample: 3-65-1

3/23/95 10.04 g F11447 Date collected: Sample size: File: Date received: 3/27/95 Matrix: Soil Ret check: F11438 Origin: Date extracted: 3/30/95 Site G Daily cal: F11439 Date analyzed: 4/14/95 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.01	•		U
1,2,3,7,8-PeCDD	ND	0.01	-		U
1,2,3,4,7,8-HxCDD	7.16	0.33	1.28	32:17	
1,2,3,6,7,8-HxCDD	35.89	0.35	1.26	32:24	
1,2,3,7,8,9-HxCDD	9.55	0.34	1.29	32:53	
1,2,3,4,6,7,8-HpCDD	864.86	0.30	1.07	37:16	E
OCDD	26183.49	5.80	0.92	42:04	E
2,3,7,8-TCDF	1.93	0.11	0.80	22:18	
1,2,3,7,8-PeCDF	2.65	0.02	1.62	26:20	
2,3,4,7,8-PeCDF	3.83	0.02	1.66	27:20	
1,2,3,4,7,8-HxCDF	68.72	1.13 🛴	1.32	31:11	E
1,2,3,6,7,8-HxCDF	26.09	1.09	1.30	31:21	
2,3,4,6,7,8-HxCDF	18.74	1.27	1.32	32:02	
1,2,3,7,8,9-HxCDF	12.93	1.41	1.15	33:19	
1,2,3,4,6,7,8-HpCDF	509.26	1.75	1.07	35:43	E
1,2,3,4,7,8,9-HpCDF	53.49	2.08	1.08	37:47	E,
OCDF	13559.65	5.83	0.93	42:12	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.01	U
TOTAL PeCDD	2	0.36	0.01	j
TOTAL HXCDD	5	168.03	0.35	E
TOTAL HPCDD	2	1641.37	0.30	E
TOTAL TCDF	7	5.48	0.11	
TOTAL PeCDF	7	31.89	0.02	E
TOTAL HXCDF	8	685.77	1.41	Ε
TOTAL HPCDF	4	2698.20	2.08	E

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

Phone: (713) 972-1037

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: QA-1 SAMPLE ANALYSIS QC REPORT

Ionics Project: 95-265 Ionics Sample: 3-65-1

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected:

3/23/95 3/27/95 Sample size: Matrix:

Origin:

10.04 g

File:

F11447 F11438

Date received: Date extracted: Date analyzed: 3/30/95 4/14/95

Soil Site G

Ret check: Daily cal: Initial cal:

F11439 F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
		*			
13C12-2,3,7,8-TCDF	4.05	81.4	0.85	22:17	-
13C12-2,3,7,8-TCDD	16.46	330.5	0.70	22:54	Υ
13C12-1,2,3,6,7,8-HxCDD	4.23	84.9	1.36	32:23	-
13C12-1,2,3,4,6,7,8-HpCDF	4.67	46.9	1.20	35:41	-
13C12-OCDD	0.45	4.5	2.89	42:04	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.47	99.0	22:56	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.85	22:43	-
13C12-1,2,3,7,8,9-HxCDD	1.37	32:52	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occuring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

ANALYSIS OF POLYCHLORINA I ED DIOXINS/FURAN: BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265
Client Sample: QA-2 REPORT Ionics Sample: 3-65-2

Sample size: 10.07 g File: Date collected: 3/23/95 F11448 Date received: 3/27/95 Matrix: Soil Ret check: F11438 Origin: Site G Date extracted: 3/30/95 Daily cal: F11439 Initial cal: F052394C Date analyzed: 4/14/95

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.01	-		U
1,2,3,7,8-PeCDD	ND	0.04	-		U
1,2,3,4,7,8-HxCDD	1.77	0.22	1.39	32:25	J
1,2,3,6,7,8-HxCDD	8.99	0.23	1.26	32:32	
1,2,3,7,8,9-HxCDD	3.45	0.22	1.15	33:00	
1,2,3,4,6,7,8-HpCDD	217.04	0.15	1.06	37:10	Ε
OCDD	5630.09	2.09	0.93	41:56	E
2,3,7,8-TCDF -	1.65	0.02	0.75	22:23	
1,2,3,7,8-PeCDF	2.49	0.02	1.61	26:28	
2,3,4,7,8-PeCDF	ND	0.03	•		U
1,2,3,4,7,8-HxCDF	26.98	0.28	1.29	31:21	
1,2,3,6,7,8-HxCDF	4.36	0.27 🔭	1.21	31:29	
2,3,4,6,7,8-HxCDF	2.58	0.32	1.24	32:16	
1,2,3,7,8,9-HxCDF	ND	0.35	-		U
1,2,3,4,6,7,8-HpCDF	120.60	0.20	1.06	35:44	E
1,2,3,4,7,8,9-HpCDF	10.21	0.23	1.04	37:46	
OCDF	935.43	1.62	0.92	42:03	Ε

Number	Conc (ppb)	DL (ppb)	Flags
0	ND	0.01	U
0	ND	0.04	υ
5	53.04	0.23	E
2	463.90	0.15	E
3	2.78	0.02	
8	18.80,	0.03	
8	214.66	0.35	E
4	524.95	0.23	E
	0 0 5 2 3 8 8	0 ND 0 ND 5 53.04 2 463.90 3 2.78 8 18.80 8 214.66	0 ND 0.01 0 ND 0.04 5 53.04 0.23 2 463.90 0.15 3 2.78 0.02 8 18.80, 0.03 8 214.66 0.35

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

Phone: (713) 972-1037

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS
BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265
Client Sample: QA-2 QC REPORT Ionics Sample: 3-65-2

Date collected: 3/23/95 Sample size: 10.07 g File: F11448 Date received: Matrix: Soil Ret check: F11438 3/27/95 Date extracted: 3/30/95 Origin: Site G Daily cal: F11439 Date analyzed: 4/14/95 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.99	80.4	0.87	22:22	-
13C12-2,3,7,8-TCDD	10.74	216.2	0.66	23:00	Υ
13C12-1,2,3,6,7,8-HxCDD	3.76	75.8	1.35	32:31	-
13C12-1,2,3,4,6,7,8-HpCDF	4.38	44.1	1.12	35:43	-
13C12-OCDD	1.27	12.8	0.95	41:55	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.16	86.9	23:01	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.88	22:49	-
13C12-1,2,3,7,8,9-HxCDD	1.27	32:59	•

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

Phone: (713) 972-1037

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265
Client Sample: QA-3 REPORT Ionics Sample: 3-65-3

File: Date collected: 3/23/95 Sample size: 10.02 g F11451 Date received: 3/27/95 Matrix: Soil Ret check: F11449 Origin: Daily cal: Date extracted: 3/30/95 Site G F11450 Initial cal: F052394C 4/15/95 Date analyzed:

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.02	•	00:00	U
1,2,3,7,8-PeCDD	ND	0.07	•	00:00	U
1,2,3,4,7,8-HxCDD	0.95	0.11	1.31	32:19	J
1,2,3,6,7,8-HxCDD	3.85	0.11	1.35	32:27	
1,2,3,7,8,9-HxCDD	2.31	0.11	1.40	32:53	J
1,2,3,4,6,7,8-HpCDD	87.76	0.09	1.03	37:04	E
OCDD	2293.87	0.35	0.92	41:45	E
2,3,7,8-TCDF	0.30	0.03	0.79	22:18	J
1,2,3,7,8-PeCDF	ND	0.03	-	00:00	U
2,3,4,7,8-PeCDF	ND	0.03	-	00:00	U
1,2,3,4,7,8-HxCDF	2.65	0.61、	1.41	31:14	
1,2,3,6,7,8-HxCDF	1.48	0.59 🚡	1.32	31:23	J
2,3,4,6,7,8-HxCDF	1.25	0.69	1.23	32:12	J
1,2,3,7,8,9-HxCDF	ND	0.76	-	00:00	U
1,2,3,4,6,7,8-HpCDF	52.36	0.65	1.07	35:38	E
1,2,3,4,7,8,9-HpCDF	1.98	0.77	1.05	37:43	J
OCDF	319.89	0.27	0.92	41:54	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TODD	1	0.18	0.02	J
TOTAL PeCDD	0	ND	0.07	U
TOTAL HXCDD	6	34.84	0.11	
TOTAL HPCDD	2	290.60	0.09	Ε
TOTAL TCDF	5	1.27	0.03	
TOTAL PeCDF	4	7.44	0.03	
TOTAL HXCDF	7	93.25	0.76	E
TOTAL HpCDF	3	257.32	0.77	E

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

Phone: (713) 972-1037

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265
Client Sample: QA-3 QC REPORT Ionics Sample: 3-65-3

File: Date collected: 3/23/95 Sample size: 10.02 g F11451 Date received: 3/27/95 Matrix: Soil Ret check: F11449 3/30/95 Origin: Site G Daily cal: F11450 Date extracted: Initial cal: F052394C Date analyzed: 4/15/95

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	4.05	81.2	0.84	22:17	-
13C12-2,3,7,8-TCDD	6.07	121.6	0.75	22:55	Υ
13C12-1,2,3,6,7,8-HxCDD	4.14	82.9	1.38	32:26	•
13C12-1,2,3,4,6,7,8-HpCDF	5.06	50.7	1.10	35:37	-
13C12-OCDD	1.55	15.5	0.93	41:43	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.27	90.8	22:56	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	22:42	-
13C12-1,2,3,7,8,9-HxCDD	1.38	32:52	-
			,

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

Phone: (713) 972-1037

Client Project: 8168 SAMPLE ANALYSIS Lab Project: 95-265
Client Sample: QA-4 REPORT Lab Sample: 3-65-4

File: Date collected: Sample size: 10.04 g F11452 3/23/95 Matrix: Soil Ret check: Date received: 3/27/95 F11449 Date extracted: 3/30/95 Origin: Site G Daily cal: F11450 Initial cal: F052394C Date analyzed: 4/15/95

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.04	•		U
1,2,3,7,8-PeCDD	ND	0.08	-		U
1,2,3,4,7,8-HxCDD	0.63	0.18	1.24	32:20	J
1,2,3,6,7,8-HxCDD	2.41	0.18	1.27	32:27	J
1,2,3,7,8,9-HxCDD	1.74	0.18	1.50	32:53	J
1,2,3,4,6,7,8-HpCDD	59.84	0.14	1.04	37:03	E
OCDD	1465.50	1.31	0.92	41:42	Ε
2,3,7,8-TCDF	0.23	0.04	0.75	22:17	J
1,2,3,7,8-PeCDF	ND	0.05	-		U
2,3,4,7,8-PeCDF	ND	0.05	-		U
1,2,3,4,7,8-HxCDF	2.02	0.23	1.28	31:15	J
1,2,3,6,7,8-HxCDF	1.31	0.23	1.23	31:25	J
2,3,4,6,7,8-HxCDF	1.00	0.26	1.28	32:12	J
1,2,3,7,8,9-HxCDF	ND	0.29	-		U
1,2,3,4,6,7,8-HpCDF	36.08	0.40	1.07	35:37	
1,2,3,4,7,8,9-HpCDF	1.57	0.48	1.02	37:43	J
OCDF	206.24	0.69	0.92	41:52	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.04	U
TOTAL PeCDD	0	ND	0.08	U
TOTAL HXCDD	5	24.25	0.18	
TOTAL HPCDD	2	198.32	0.14	E
TOTAL TCDF	6	1.41	0.04	
TOTAL PeCDF	4	4.96	0.05	
TOTAL HXCDF	7	74.66	0.29	È
TOTAL HPCDF	4	185.05	0.48	Ε

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

Phone: (713) 972-1037

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Lab Project: 95-265
Client Sample: QA-4 QC REPORT Lab Sample: 3-65-4

Date collected: 3/23/95 Sample size: 10.04 g File: F11452 3/27/95 Matrix: F11449 Date received: Soil Ret check: Date extracted: 3/30/95 Origin: Site G Daily cal: F11450 Date analyzed: 4/15/95 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	4.01	80.6	0.84	22:17	-
13C12-2,3,7,8-TCDD	5.44	109.2	0.77	22:55	•
13C12-1,2,3,6,7,8-HxCDD	3.65	73.2	1.38	32:26	•
13C12-1,2,3,4,6,7,8-HpCDF	4.24	42.6	1.08	35:36	-
13C12-OCDD	1.58	15.9	1.01	41:40	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.20	88.2	22:56	•

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	22:42	-
13C12-1,2,3,7,8,9-HxCDD	1.23	32:52	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

Phone: (713) 972-1037

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265
Client Sample: QA-5 REPORT Ionics Sample: 3-65-5

3/23/95 Sample size: 10,03 g File: F11414 Date collected: 3/27/95 Matrix: Soil Ret check: F11412 Date received: Origin: Site G Daily cal: F11413 Date extracted: 3/30/95 Initial cal: F052394C Date analyzed: 4/13/95

ND	0.00			
	0.03	-		U
ND	0.19	-		U
0.71	0.19	1.32	32:21	J
2.89	0.20	1.26	32:28	
2.03	0.19	1.44	32:50	J
88.08	0.18	1.02	37:00	E
1436.28	0.56	0.93	41:43	E
0.18	0.06	0.82	22:12	J
ND	0.11	-		U
0.25	0.12	1.55	27:14	J
1.69	0.16	1.40	31:14	J
0.80	0.15	1.33	31:23	J
0.63	0.18	1.14	32:13	J
ND	0.20	-		U
35.24	0.44	1.02	35:34	
1.92	0.52	1.02	37:38	J
211.02	0.30	0.91	41:51	E
	0.71 2.89 2.03 88.08 1436.28 0.18 ND 0.25 1.69 0.80 0.63 ND 35.24 1.92	0.71 0.19 2.89 0.20 2.03 0.19 88.08 0.18 1436.28 0.56 0.18 0.06 ND 0.11 0.25 0.12 1.69 0.16 0.80 0.15 0.63 0.18 ND 0.20 35.24 0.44 1.92 0.52	0.71 0.19 1.32 2.89 0.20 1.26 2.03 0.19 1.44 88.08 0.18 1.02 1436.28 0.56 0.93 0.18 0.06 0.82 ND 0.11 - 0.25 0.12 1.55 1.69 0.16 1.40 0.80 0.15 1.33 0.63 0.18 1.14 ND 0.20 - 35.24 0.44 1.02 1.92 0.52 1.02	0.71 0.19 1.32 32:21 2.89 0.20 1.26 32:28 2.03 0.19 1.44 32:50 88.08 0.18 1.02 37:00 1436.28 0.56 0.93 41:43 0.18 0.06 0.82 22:12 ND 0.11 - 0.25 0.12 1.55 27:14 1.69 0.16 1.40 31:14 0.80 0.15 1.33 31:23 0.63 0.18 1.14 32:13 ND 0.20 - 35.24 0.44 1.02 35:34 1.92 0.52 1.02 37:38

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TODD	1	0.12	0.03	J
TOTAL PeCDD	1	0.27	0.19	J
TOTAL HXCDD	5	19.38	0.20	
TOTAL HPCDD	2	193.66	0.18	E
TOTAL TCDF	6	0.97	0.06	J
TOTAL PeCDF	7	5.35	0.12	
TOTAL HXCDF	8	463.62	0.20	E
TOTAL HPCDF	4	151.10	0.52	Ε

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

IONICS INTERNATIONAL, INC.

Phone: (713) 972-1037 Fax: (713) 784-1152

Client Project: 8168

Client Sample: QA-5

SAMPLE ANALYSIS

OC REPORT

Ionics Project: 95-265

Ionics Sample: 3-65-5

Date collected: 3/23/95 Sample size: 10.03 g Fila. F11414 Date received: 3/27/95 Matrix: Soil Ret check: F11412 3/30/95 Date extracted: Origin: Site G Daily cal: F11413 Initial cal: Date analyzed: 4/13/95 F052394C

internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.91	78.4	0.85	22:12	-
13C12-2,3,7,8-TCDD	5.38	108.0	0.75	22:50	•
13C12-1,2,3,6,7,8-HxCDD	3.31	66.4	1.32	32:26	-
13C12-1,2,3,4,6,7,8-HpCDF	5.02	50.4	1.17	35:34	-
13C12-OCDD	2.50	25.1	1.05	41:40	Υ

Conc (ppb)	% Rec	RT (min)	Flags
2.23	89.3	51:00	-
		Maria de la companya	

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.85	22:37	-
13C12-1,2,3,7,8,9-HxCDD	1.24	32:49	•

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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Client Project: 8168 SAMPLE ANALYSIS lonics Project: 95-265
Client Sample: QA-6 REPORT lonics Sample: 3-65-6

3/23/95 Sample size: 10.01 g File: F11415 Date collected: Matrix: Date received: 3/27/95 Soil Ret check: F11412 Date extracted: 3/30/95 Origin: Site G Daily cal: F11413 Date analyzed: Initial cal: 4/13/95 F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.03	-		U
1,2,3,7,8-PeCDD	ND	0.21	-		U
1,2,3,4,7,8-HxCDD	0.36	0.15	1.19	32:15	J
1,2,3,6,7,8-HxCDD	2.18	0.16	1.38	32:22	J
1,2,3,7,8,9-HxCDD	1.12	0.16	1.40	32:47	J
1,2,3,4,6,7,8-HpCDD	61.42	0.17	1.06	36:57	Ε
OCDD	1131.63	1.05	0.93	41:35	E
2,3,7,8-TCDF	0.15	0.04	0.73	22:09	J
1,2,3,7,8-PeCDF	ND	0.10	-		U
2,3,4,7,8-PeCDF	ND	0.11	•		U
1,2,3,4,7,8-HxCDF	1.09	0.15、	1.20	31:10	J
1,2,3,6,7,8-HxCDF	0.74	0.15 "	1.20	31:18	J
2,3,4,6,7,8-HxCDF	0.43	0.17	1.26	32:01	J
1,2,3,7,8,9-HxCDF	ND	0.19	-		U
1,2,3,4,6,7,8-HpCDF	24.87	0.36	1.04	35:31	
1,2,3,4,7,8,9-HpCDF	ND	0.43	-		U
OCDF	167.07	0.49	0.92	41:44	Ε

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.10	0.03	J
TOTAL PeCDD	i	0.16	0.21	J
TOTAL HxCDD	6	14.22	0.16	_
TOTAL HPCDD	2	134.25	0.17	E
TOTAL TCDF	2	0.34	0.04	J
TOTAL PeCDF	2	1.93 ,	0.11	
TOTAL HXCDF	8	32.38	0.19	
TOTAL HPCDF	2	99.34	0.43	E

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168

Client Sample: QA-6

SAMPLE ANALYSIS

Ionics Project: 95-265

Ionics Sample: 3-65-6

Date collected: 3/23/95 Sample size: 10.01 g File: F11415 Matrix: Ret check: Date received: 3/27/95 Sail F11412 Date extracted: 3/30/95 Origin: Site G Daily cal: F11413 Initial cal: 4/13/95 F052394C Date analyzed:

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	4.14	82.8	0.81	22:08	-
13C12-2,3,7,8-TCDD	5.16	103.4	0.79	22:48	-
13C12-1,2,3,6,7,8-HxCDD	3.62	72.5	1.37	32:21	•
13C12-1,2,3,4,6,7,8-HpCDF	5.16	51.6	1.19	35:30	-
13C12-OCDD	1.83	18.3	1.10	41:34	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.33	93.4	22:48	•

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.85	22:35	•
13C12-1,2,3,7,8,9-HxCDD	1.30	32:46	-
	•		

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265
Client Sample: QA-7 REPORT Ionics Sample: 3-65-7

Sample size: File: Date collected: 3/23/95 10.03 g F11416 3/27/95 Matrix: Soil Ret check: F11412 Date received: 3/30/95 Origin: Site G Daily cal: F11413 Date extracted: Initial cal: Date analyzed: 4/13/95 F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.05	-		U
1,2,3,7,8-PeCDD	ND	0.11	-		U
1,2,3,4,7,8-HxCDD	0.49	0.16	1.24	32:14	J
1,2,3,6,7,8-HxCDD	1.93	0.17	1.26	32:20	J
1,2,3,7,8,9-HxCDD	1.10	0.16	1.36	32:45	J
1,2,3,4,6,7,8-HpCDD	48.63	0.11	1.06	36:54	
OCDD	915.27	0.84	0.92	41:35	E
2,3,7,8-TCDF	0.21	0.09	0.74	22:13	J
1,2,3,7,8-PeCDF	ND	0.04	-		U
2,3,4,7,8-PeCDF	ND	0.05	-		U
1,2,3,4,7,8-HxCDF	1.20	0.14	1.29	31:08	J
1,2,3,6,7,8-HxCDF	0.75	0.14	1.20	31:17	J
2,3,4,6,7,8-HxCDF	0.51	0.16	1.33	31:59	J
1,2,3,7,8,9-HxCDF	ND	0.18	-		U
1,2,3,4,6,7,8-HpCDF	23.28	0.30	1.07	35:29	
1,2,3,4,7,8,9-HpCDF	1.22	0.36	1.11	37:33	J
OCDF	119.34	0.86	0.92	41:47	Ε

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.20	0.05	J
TOTAL PeCDD	1	0.22	0.11	J
TOTAL HXCDD	5	12.79	0.17	
TOTAL HPCDD	2	107.08	0.11	Ε
TOTAL TCDF	2	0.50	0.09	J
TOTAL PeCDF	4	3.81	0.05	
TOTAL HXCDF	8	35.92	0.18	
TOTAL HpCDF	4	90.26	0.36	E

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265
Client Sample: QA-7 QC REPORT Ionics Sample: 3-65-7

Date collected: 3/23/95 Sample size: 10.03 g File: F11416 3/27/95 Matrix: Soil Ret check: Date received: F11412 3/30/95 Origin: Site G Daily cal: Date extracted: F11413 Date analyzed: 4/13/95 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	4.14	83.0	0.81	22:12	-
13C12-2,3,7,8-TCDD	5.18	103.9	0.78	22:50	-
13C12-1,2,3,6,7,8-HxCDD	3.71	74.5	1.35	32:19	•
13C12-1,2,3,4,6,7,8-HpCDF	4.93	49.5	1.16	35:28	-
13C12-OCDD	1.88	18.9	1.05	41:34	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.22	89.2	22:51	-

22:38	-
32:44	-
	32:44

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265
Client Sample: QA-8 REPORT Ionics Sample: 3-65-8

Date collected: 3/23/95 Sample size: 10.07 g File: F11417 Matrix: Soil Ret check: F11412 3/27/95 Date received: Origin: Site G Date extracted: 3/30/95 Daily cal: F11413 Date analyzed: 4/13/95 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.11	-		υ
1,2,3,7,8-PeCDD	ND	0.15	•		Ū
1,2,3,4,7,8-HxCDD	0.43	0.25	1.34	32:15	J
1,2,3,6,7,8-HxCDD	2.34	0.26	1.33	32:22	J
1,2,3,7,8,9-HxCDD	0.89	0.26	1.24	32:48	J
1,2,3,4,6,7,8-HpCDD	63.45	0.10	1.07	36:59	E
OCDD	1272.54	0.82	0.93	41:36	Ε
2,3,7,8-TCDF -	ND	0.07	-		U
1,2,3,7,8-PeCDF	ND	0.06	-		U
2,3,4,7,8-PeCDF	ND	0.06	-		U
1,2,3,4,7,8-HxCDF	1.30	0.19	1.42	31:10	j
1,2,3,6,7,8-HxCDF	0.87	0.19 🔭	1.26	31:18	J
2,3,4,6,7,8-HxCDF	0.49	0.22	1.32	32:00	J
1,2,3,7,8,9-HxCDF	ND	0.24	-		U
1,2,3,4,6,7,8-HpCDF	27.66	0.65	1.06	35:34	
1,2,3,4,7,8,9-HpCDF	1.43	0.77	1.17	37:38	J
OCDF	182.47	0.66	0.89	41:47	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TODD	1	0.23	0.11	J
TOTAL PeCDD	0	ND	0.15	U
TOTAL HXCDD	5	13.17	0.26	
TOTAL HPCDD	2	135.46	0.10	E
TOTAL TCDF	0	ND	0.07	U
TOTAL PeCDF	3	2.54 ,	0.06	
TOTAL HXCDF	8	42.28	0.24	
TOTAL HpCDF	4	132.98	0.77	Ε

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

SAMPLE ANALYSIS Ionics Project: 95-265 Client Project: 8168 Client Sample: QA-8 **QC REPORT** Ionics Sample: 3-65-8 Date collected: 3/23/95 Sample size: 10.07 g File: F11417 Matrix: Date received: 3/27/95 Soil Ret check: F11412

Date extracted: 3/30/95 Origin: Site G Daily cal: F11413
Date analyzed: 4/13/95 Initial cal: F052394C

Internal standards Conc (ppb) % Rec Ratio RT (min) Flags

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.91	78.7	0.86	22:13	•
13C12-2,3,7,8-TCDD	5.07	102.1	0.76	22:52	-
13C12-1,2,3,6,7,8-HxCDD	3.54	71.2	1.37	32:20	-
13C12-1,2,3,4,6,7,8-HpCDF	4.37	44.0	1.13	35:33	-
13C12-OCDD	1.80	18.1	1.03	41:36	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.26	90.9	22:53	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.84	22:39	-
13C12-1,2,3,7,8,9-HxCDD	1.27	32:47	-
13012-1,2,3,7,8,9-13000	1.27	32.47	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265
Client Sample: QA-9 REPORT Ionics Sample: 3-65-9

Sample size: File: Date collected: 3/23/95 10.04 g F11418 Matrix: Soil Ret check: F11412 Date received: 3/27/95 Origin: Date extracted: 3/30/95 Site G Daily cal: F11413 Initial cal: F052394C Date analyzed: 4/13/95

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.03			U
1,2,3,7,8-PeCDD	ND	0.16	-		U
1,2,3,4,7,8-HxCDD	0.49	0.14	1.20	32:18	J
1,2,3,6,7,8-HxCDD	1.93	0.15	1.35	32:26	J
1,2,3,7,8,9-HxCDD	1.35	0.15	1.40	32:51	J
1,2,3,4,6,7,8-HpCDD	42.17	0.17	1.05	37:01	
OCDD	984.88	0.80	0.92	41:35	Ε
2,3,7,8-TCDF -	0.26	0.03	0.72	22:15	j
1,2,3,7,8-PeCDF	ND	0.05	-		U
2,3,4,7,8-PeCDF	ND	0.05	•		U
1,2,3,4,7,8-HxCDF	1.68	0.21	1.36	31:14	J
1,2,3,6,7,8-HxCDF	1.01	0.20 🔭	1.23	31:23	J
2,3,4,6,7,8-HxCDF	0.59	0.23	1.07	32:05	J
1,2,3,7,8,9-HxCDF	ND	0.26	•		U
1,2,3,4,6,7,8-HpCDF	21.77	0.43	1.07	35:36	
1,2,3,4,7,8,9-HpCDF	0.96	0.51	1.04	37:39	J
OCDF	118.49	0.55	0.92	41:47	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.32	0.03	J
TOTAL PeCDD	1	0.25	0.16	j
TOTAL HXCDD	5	13.23	0.15	
TOTAL HPCDD	2	91.23	0.17	E
TOTAL TCDF	1	0.26	0.03	J
TOTAL PeCDF	3	3.18	0.05	
TOTAL HXCDF	8	45.56 [′]	0.26	**
TOTAL HpCDF	4	89.54	0.51	Ε

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265
Client Sample: QA-9 QC REPORT Ionics Sample: 3-65-9

Sample size: Date collected: 3/23/95 10.04 g File: F11418 Date received: 3/27/95 Matrix: Soil Ret check: F11412 Origin: Site G Daily cal: F11413 Date extracted: 3/30/95 Date analyzed: Initial cal: F052394C 4/13/95

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	4.01	80.5	0.83	22:14	-
13C12-2,3,7,8-TCDD	5.27	105.9	0.75	22:53	-
13C12-1,2,3,6,7,8-HxCDD	3.99	80.2	1.35	32:25	•
13C12-1,2,3,4,6,7,8-HpCDF	4.63	46.5	1.14	35:35	•
13C12-OCDD	1.89	19.0	0.97	41:34	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.18	87.7	22:54	-

Recovery standards	`* Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.85	22:40	-
13C12-1,2,3,7,8,9-HxCDD	1.34	32:51	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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Client Project: 8168 SAMPLE ANALYSIS lonics Project: 95-265
Client Sample: QA-10 REPORT lonics Sample: 3-65-10

Date collected: 3/23/95 Sample size: 10.06 g File: F11429 Matrix: Date received: 3/27/95 Soil Ret check: F11425 Origin: Site G Daily cal: F11426 Date extracted: 3/30/95 4/13/95 Initial cal: F052394C Date analyzed:

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.01	-		U
1,2,3,7,8-PeCDD	ND	0.04	-		U
1,2,3,4,7,8-HxCDD	1.03	0.21	1.39	32:52	J
1,2,3,6,7,8-HxCDD	4.05	0.22	1.43	32:59	
1,2,3,7,8,9-HxCDD	2.18	0.22	1.12	33:24	j
1,2,3,4,6,7,8-HpCDD	58.54	0.12	1.05	37:25	E
OCDD	1654.21	2.06	0.92	41:57	E
2,3,7,8-TCDF _	ND	0.04	•		U
1,2,3,7,8-PeCDF	ND	0.10	-		U
2,3,4,7,8-PeCDF	ND	0.11	•		U
1,2,3,4,7,8-HxCDF	4.87	0.46~	1.29	31:54	
1,2,3,6,7,8-HxCDF	1.70	0.44	1.34	32:01	J
2,3,4,6,7,8-HxCDF	1.57	0.51	1.43	32:46	J
1,2,3,7,8,9-HxCDF	0.99	0.57	1.42	33:46	J
1,2,3,4,6,7,8-HpCDF	40.48	0.17	1.06	36:07	
1,2,3,4,7,8,9-HpCDF	ND	0.20	•		U
OCDF	243.23	1.18	0.91	42:08	Ε

Number	Conc (ppb)	DL (ppb)	Flags
2	1.36	0.01	
2	0.55	0.04	j
5	23.54	0.22	
2	119.17	0.12	E
4	2.18	0.04	
4	8.19	0.11	
5	46.79 '	0.57	
2	163.54	0.20	E
	2 2 5 2 4 4 5	2 1.36 2 0.55 5 23.54 2 119.17 4 2.18 4 8.19 5 46.79	2 1.36 0.01 2 0.55 0.04 5 23.54 0.22 2 119.17 0.12 4 2.18 0.04 4 8.19 0.11 5 46.79 0.57

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265
Client Sample: QA-10 QC REPORT Ionics Sample: 3-65-10

Date collected: 3/23/95 Sample size: 10.06 g File: F11429 Date received: 3/27/95 Matrix: Soil Ret check: F11425 Date extracted: 3/30/95 Origin: Site G Daily cal: F11426 4/13/95 Initial cal: F052394C Date analyzed:

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.61	72.7	0.88	22:38	-
13C12-2,3,7,8-TCDD	6.85	137.8	0.71	23:16	Υ
13C12-1,2,3,6,7,8-HxCDD	3.89	78.4	1.33	32:58	-
13C12-1,2,3,4,6,7,8-HpCDF	3.67	36.9	1.12	36:06	Υ
13C12-OCDD	0.97	9.7	0.83	41:56	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.50	100.4	23:17	•

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.82	22:57	-
13C12-1,2,3,7,8,9-HxCDD	1.30	33:23	•

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS lonics Project: 95-265
Client Sample: WA-1 REPORT lonics Sample: 3-65-11

Sample size: 10.07 g Date collected: 3/23/95 File: F11453 Matrix: Date received: 3/27/95 Soil Ret check: F11449 Origin: Site G Daily cal: Date extracted: 3/30/95 F11450 Date analyzed: 4/15/95 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.03	•	00:00	U
1,2,3,7,8-PeCDD	ND	0.08	-	00:00	U
1,2,3,4,7,8-HxCDD	7.92	0.24	1.33	32:11	
1,2,3,6,7,8-HxCDD	45.03	0.25	1.29	32:19	
1,2,3,7,8,9-HxCDD	8.21	0.25	1.41	32:48	
1,2,3,4,6,7,8-HpCDD	942.33	0.33	1.06	37:04	E
OCDD	27324.77	2.25	0.93	41:50	E
2,3,7,8-TCDF _	1.15	0.04	0.70	22:17	
1,2,3,7,8-PeCDF	ND	0.02	•	00:00	U
2,3,4,7,8-PeCDF	0.92	0.02	1.50	27:19	J
1,2,3,4,7,8-HxCDF	26.81	0.35 ~	1.31	31:09	
1,2,3,6,7,8-HxCDF	9.45	0.34	1.15	31:18	
2,3,4,6,7,8-HxCDF	6.55	0.39	1.37	32:03	
1,2,3,7,8,9-HxCDF	2.91	0.44	1.28	33:15	
1,2,3,4,6,7,8-HpCDF	591.44	0.66	1.08	35:36	E
1,2,3,4,7,8,9-HpCDF	34.70	0.79	1.09	37:41	
OCDF	13672.30	1.44	0.95	41:59	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.20	0.03	J
TOTAL PeCDD	0	ND	0.08	U
TOTAL HXCDD	3	61.16	0.25	E
TOTAL HPCDD	2	2774.81	0.33	E
TOTAL TCDF	4	5.54	0.04	
TOTAL PeCDF	9	29.95	0.02	E
TOTAL HXCDF	9	868.10	0.44	E
TOTAL HPCDF	4	3581.60	0.79	E

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

SAMPLE ANALYSIS Ionics Project: 95-265 Client Project: 8168 **QC REPORT Client Sample: WA-1** Ionics Sample: 3-65-11 Sample size: Date collected: 3/23/95 10.07 g File: F11453 Matrix: Ret check: Soil Date received: 3/27/95 F11449 Date extracted: 3/30/95 Origin: Site G Daily cal: F11450 Initial cal: F052394C Date analyzed: 4/15/95

internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.62	73.0	0.82	22:16	-
13C12-2,3,7,8-TCDD	11.55	232.6	0.65	22:53	Υ
13C12-1,2,3,6,7,8-HxCDD	4.03	81.1	1.20	32:18	-
13C12-1,2,3,4,6,7,8-HpCDF	4.60	46.3	1.00	35:35	•
13C12-OCDD	0.61	6.1	1.62	41:48	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.09	84.3	22:55	-

" Ratio	RT (min)	Flags
0.83	22:42	-
1.40	32:47	-
	0.83	0.83 22:42

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS lonics Project: 95-265
Client Sample: WA-2 REPORT lonics Sample: 3-65-12

Date collected: 3/23/95 Sample size: 10.1 g File: F11430 Matrix: Soil Ret check: F11425 Date received: 3/27/95 Date extracted: 3/30/95 Origin: Site G Daily cal: F11426 Date analyzed: 4/13/95 Initial cal: F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.06	-	00:00	U
1,2,3,7,8-PeCDD	0.74	0.11	1.37	27:42	J
1,2,3,4,7,8-HxCDD	4.78	0.35	1.20	32:08	
1,2,3,6,7,8-HxCDD	20.72	0.36	1.33	32:14	
1,2,3,7,8,9-HxCDD	8.16	0.36	1.30	32:42	
1,2,3,4,6,7,8-HpCDD	491.45	0.24	1.06	37:01	E
OCDD	10579.19	3.10	0.92	41:50	E
2,3,7,8-TCDF -	ND	0.06	-	00:00	U
1,2,3,7,8-PeCDF	ND	0.13	-	00:00	U
2,3,4,7,8-PeCDF	ND	0.14	-	00:00	U
1,2,3,4,7,8-HxCDF	7.11	0.61,~	1.37	31:04	
1,2,3,6,7,8-HxCDF	6.10	0.59`*	1.21	31:12	
2,3,4,6,7,8-HxCDF	10.00	0.69	1.34	31:59	
1,2,3,7,8,9-HxCDF	ND	0.76	-	00:00	U
1,2,3,4,6,7,8-HpCDF	306.10	0.86	1.08	35:32	Ε
1,2,3,4,7,8,9-HpCDF	ND	1.02	· <u>-</u>	00:00	U
OCDF	5556.74	3.05	0.92	42:00	Ε

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TODD	o	ND	0.06	U
TOTAL PeCDD	2	1.34	0.11	
TOTAL HXCDD	6	131.25	0.36	E
TOTAL HPCDD	2	1409.05	0.24	E
TOTAL TODE	1	3.93	0.06	
TOTAL PeCDF	3	30.86	0.14	E
TOTAL HXCDF	7	385.79 [°]	0.76	E
TOTAL HPCDF	4	1476.39	1.02	E

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265
Client Sample: WA-2 QC REPORT Ionics Sample: 3-65-12

Sample size: Date collected: 3/23/95 10.1 g File: F11430 3/27/95 Matrix: Ret check: F11425 Date received: Soil Origin: Site G Daily cal: F11426 Date extracted: 3/30/95 Date analyzed: 4/13/95 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.74	75.6	0.84	22:14	-
13C12-2,3,7,8-TCDD	6.20	125.2	0.74	22:51	Υ
13C12-1,2,3,6,7,8-HxCDD	3.85	77.8	1.34	32:14	•
13C12-1,2,3,4,6,7,8-HpCDF	5.26	53.1	1.16	35:31	-
13C12-OCDD	0.59	5.9	1.00	41:48	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.27	91.6	22:56	•

1 40C40 4 0 0 4 TCDD	e 00.00	-
13C12-1,2,3,4-TCDD 0.86	6 22:39	•
13C12-1,2,3,7,8,9-HxCDD 1.35	5 32:41	•

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Lab Project: 95-265
Client Sample: WA-3 REPORT Lab Sample: 3-65-13

Sample size: File: Date collected: 3/23/95 10.1 g F11422 Date received: 3/27/95 Matrix: Soil Ret check: F11412 Origin: Date extracted: 3/30/95 Site G Daily cal: F11413 Initial cal: F052394C Date analyzed: 4/13/95

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.01	•		U
1,2,3,7,8-PeCDD	ND	0.04	-		U
1,2,3,4,7,8-HxCDD	2.09	0.12	1.25	32:12	J
1,2,3,6,7,8-HxCDD	9.85	0.13	1.30	32:18	
1,2,3,7,8,9-HxCDD	2.98	0.12	1.40	32:47	
1,2,3,4,6,7,8-HpCDD	204.65	0.12	1.07	37:02	Ε
OCDD	5883.84	1.26	0.93	41:48	E
2,3,7,8-TCDF -	0.53	0.01	0.85	22:16	J
1,2,3,7,8-PeCDF	ND	0.02	-		U
2,3,4,7,8-PeCDF	ND	0.02	-		U
1,2,3,4,7,8-HxCDF	9.92	0.16	1.33	31:08	
1,2,3,6,7,8-HxCDF	5.42	0.15 `*	1.10	31:17	
2,3,4,6,7,8-HxCDF	2.93	0.18	1.27	32:03	
1,2,3,7,8,9-HxCDF	ND	0.20	-		U
1,2,3,4,6,7,8-HpCDF	137.12	0.62	1.06	35:34	Ε
1,2,3,4,7,8,9-HpCDF	9.46	0.73	1.11	37:40	
OCDF	1580.23	1.67	0.92	41:55	Ε

Number	Conc (ppb)	DL (ppb)	Flags
0	ND	0.01	U
0	ND	0.04	U
6	74.48	0.13	E
2	632.49	0.12	E
3	2.44	0.01	
8	13.28,	0.02	
8	251.85	0.20	E
4	750.59	0.73	E
	0 0 6 2 3 8 8	0 ND 0 ND 6 74.48 2 632.49 3 2.44 8 13.28, 8 251.85	0 ND 0.01 0 ND 0.04 6 74.48 0.13 2 632.49 0.12 3 2.44 0.01 8 13.28, 0.02 8 251.85 0.20

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

SAMPLE ANALYSIS **Client Project: 8168** Lab Project: 95-265 QC REPORT Client Sample: WA-3 Lab Sample: 3-65-13 Sample size: File: Date collected: 3/23/95 10.1 g F11422 Date received: 3/27/95 Matrix: Soil Ret check: F11412 3/30/95 Origin: Site G Daily cal: F11413 Date extracted: Date analyzed: 4/13/95 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.92	79.1	0.87	22:15	•
13C12-2,3,7,8-TCDD	7.41	149.8	0.70	22:52	Υ
13C12-1,2,3,6,7,8-HxCDD	4.36	88.1	1.29	32:18	-
13C12-1,2,3,4,6,7,8-HpCDF	4.75	48.0	1.20	35:33	-
13C12-OCDD	1.00	10.1	1.02	41:47	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.24	90.5	22:53	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.84	22:40	•
13C12-1,2,3,7,8,9-HxCDD	1.37	32:46	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265
Client Sample: WA-4 REPORT Ionics Sample: 3-65-14

Sample size: 10.02 g File: Date collected: 3/23/95 F11423 Date received: 3/27/95 Matrix: Soil Ret check: F11412 Origin: Site G Date extracted: 3/30/95 Daily cal: F11413 Initial cal: 4/13/95 F052394C Date analyzed:

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.01		00:00	U
1,2,3,7,8-PeCDD	ND	0.03	-	00:00	U
1,2,3,4,7,8-HxCDD	1.24	0.29	1.20	32:14	J
1,2,3,6,7,8-HxCDD	4.07	0.30	1.31	32:20	
1,2,3,7,8,9-HxCDD	1.97	0.29	1.07	32:49	J
1,2,3,4,6,7,8-HpCDD	69.25	0.11	1.03	37:01	E
OCDD	1641.75	1.23	0.93	41:41	E
2,3,7,8-TCDF -	0.19	0.01	0.88	22:21	J
1,2,3,7,8-PeCDF	ND	0.01	-	00:00	U
2,3,4,7,8-PeCDF	ND	0.01	-	00:00	U
1,2,3,4,7,8-HxCDF	2.62	0.68_⁻	1.22	31:10	
1,2,3,6,7,8-HxCDF	3.82	0.66`*	1.27	31:19	
2,3,4,6,7,8-HxCDF	ND	0.76	-	00:00	U
1,2,3,7,8,9-HxCDF	2.26	0.85	1.27	32:04	J
1,2,3,4,6,7,8-HpCDF	65.52	0.50	1.08	35:35	Ε
1,2,3,4,7,8,9-HpCDF	1.74	0.59	1.12	37:40	J
OCDF	252.71	0.91	0.91	41:51	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TODD	4	0.29	0.01	J
TOTAL PeCDD	5	1.04	0.03	
TOTAL HXCDD	5	37.81	0.30	
TOTAL HPCDD	2	220.07	0.11	E
TOTAL TCDF	5	1.56	0.01	
TOTAL PeCDF	4	6.74	0.01	
TOTAL HXCDF	6	140.69	0.85	E,
TOTAL HPCDF	3	269.75	0.59	E

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168

Client Sample: WA-4

SAMPLE ANALYSIS

OC REPORT

Ionics Project: 95-265

Ionics Sample: 3-65-14

Date collected: Sample size: 10.02 g File: F11423 3/23/95 Date received: 3/27/95 Matrix: Soil Ret check: F11412 Origin: Site G F11413 Date extracted: 3/30/95 Daily cal: Initial cal: F052394C Date analyzed: 4/13/95

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.56	71.4	0.85	22:20	•
13C12-2,3,7,8-TCDD	4.58	91.9	0.78	22:58	-
13C12-1,2,3,6,7,8-HxCDD	3.81	76.4	1.31	32:19	-
13C12-1,2,3,4,6,7,8-HpCDF	3.88	38.9	1.17	35:34	Υ
13C12-OCDD	1.37	13.8	0.97	41:39	Y

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.98	79.5	22:58	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.85	22:45	-
13C12-1,2,3,7,8,9-HxCDD	1.33	32:48	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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Client Project: 8168 SAMPLE ANALYSIS Lab Project: 95-265
Client Sample: WP-1 REPORT Lab Sample: 3-65-15

Date collected: 3/23/95 Sample size: 10.03 g File: F11431 Date received: 3/27/95 Matrix: Soil Ret check: F11425 Origin: Site G Daily cal: F11426 Date extracted: 3/30/95 Initial cal: F052394C Date analyzed: 4/13/95

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	1.74	0.02	0.68	23:06	
1,2,3,7,8-PeCDD	ND	0.03	-		U
1,2,3,4,7,8-HxCDD	70.10	0.28	1.27	32:31	Ε
1,2,3,6,7,8-HxCDD	237.87	0.30	1.30	32:38	Ε
1,2,3,7,8,9-HxCDD	122.76	0.29	1.27	33:06	Ε
1,2,3,4,6,7,8-HpCDD	2529.79	0.16	1.07	37:26	Ε
OCDD	19652.20	2.91	0.93	42:05	Ε
2,3,7,8-TCDF	2.49	0.07	0.81	22:27	
1,2,3,7,8-PeCDF	ND	0.04	-		U
2,3,4,7,8-PeCDF	ND	0.04	-		U
1,2,3,4,7,8-HxCDF	84.52	1.04 -	1.27	31:30	Ε
1,2,3,6,7,8-HxCDF	31.10	1.01`*	1.19	31:38	
2,3,4,6,7,8-HxCDF	32.87	1.18	1.38	32:23	
1,2,3,7,8,9-HxCDF	12.48	1.30	1.14	33:32	
1,2,3,4,6,7,8-HpCDF	1832.21	0.38	1.09	35:55	Ε
1,2,3,4,7,8,9-HpCDF	115.26	0.45	1.10	37:57	E
OCDF	18103.05	2.85	0.93	42:14	Ε

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TODD	7	14.31	0.02	
TOTAL PeCDD	11	59.89	0.03	E
TOTAL HXCDD	7	1992.56	0.30	Ε
TOTAL HPCDD	2	7222.58	0.16	E
TOTAL TCDF	8	23.73	0.07	E
TOTAL PeCDF	9	130.28	0.04	E
TOTAL HXCDF	9	3834.16	0.00	E
TOTAL HpCDF	3	4642.35	0.45	E

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Lab Project: 95-265 Client Sample: WP-1 QC REPORT Lab Sample: 3-65-15 Date collected: Sample size: File: 3/23/95 10.03 g F11431 Ret check: Date received: 3/27/95 Matrix: Soil F11425 Date extracted: 3/30/95 Origin: Site G Daily cal: F11426 Initial cal: F052394C Date analyzed: 4/13/95

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	2.86	57.3	0.88	22:27	-
13C12-2,3,7,8-TCDD	6.78	136.0	0.69	23:04	Υ
13C12-1,2,3,6,7,8-HxCDD	3.15	63.2	1.30	32:38	-
13C12-1,2,3,4,6,7,8-HpCDF	3.30	33.1	Obscured	35:54	Υ
13C12-OCDD	0.53	5.3	2.28	42:04	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37CI4-2,3,7,8-TCDD	1.61	64.7	23:05	-

Recovery standards	*	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD		0.81	22:51	-
13C12-1,2,3,7,8,9-HxCDD		1.37	33:05	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265
Client Sample: DA-1 REPORT Ionics Sample: 3-65-16

File: Sample size: F11427 Date collected: 3/23/95 10.02 g Matrix: Soil Ret check: Date received: 3/27/95 F11425 Date extracted: 3/30/95 Origin: Site G Daily cal: F11426 Initial cal: F052394C Date analyzed: 4/13/95

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.01	-		υ
1,2,3,7,8-PeCDD	ND	0.06	-		U
1,2,3,4,7,8-HxCDD	ND	0.09	-		U
1,2,3,6,7,8-HxCDD	ND	0.09	-		U
1,2,3,7,8,9-HxCDD	ND	0.09	•		U
1,2,3,4,6,7,8-HpCDD	3.08	0.04	1.19	36:56	
OCDD	36.55	0.07	0.91	41:41	
2,3,7,8-TCDF ~	0.05	0.02	0.76	22:10	J
1,2,3,7,8-PeCDF	ND	0.02	-		U
2,3,4,7,8-PeCDF	ND	0.02	-		U
1,2,3,4,7,8-HxCDF	0.06	0.05 ~	1.06	30:58	J
1,2,3,6,7,8-HxCDF	ND	0.05 🔭	-		U
2,3,4,6,7,8-HxCDF	ND	0.05	-		U
1,2,3,7,8,9-HxCDF	ND	0.06	-		U
1,2,3,4,6,7,8-HpCDF	0.87	0.08	1.13	35:27	J
1,2,3,4,7,8,9-HpCDF	ND	0.10	•		U
OCDF	4.03	0.06	1.00	41:53	J ´

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TODD	2	0.12	0.01	J
TOTAL PeCDD	0	ND	0.06	U
TOTAL HXCDD	1	0.11	0.09	J
TOTAL HPCDD	2	5.47	0.04	
TOTAL TCDF	2	0.07	0.02	J
TOTAL PeCDF	2	0.14	0.02	J
TOTAL HXCDF	3	0.58 '	0.06	J
TOTAL HPCDF	2	3.39	0.10	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

2%

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265 Client Sample: DA-1 **QC REPORT** Ionics Sample: 3-65-16 Sample size: Date collected: 3/23/95 10.02 g File: F11427 Date received: 3/27/95 Matrix: Soil Ret check: F11425

Date received: 3/27/95 Matrix: Soil Ret check: F11425
Date extracted: 3/30/95 Origin: Site G Daily cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.79	76.0	0.86	22:09	_
13C12-2,3,7,8-TCDD	4.11	82.4	0.81	22:47	•
13C12-1,2,3,6,7,8-HxCDD	3.76	75.3	1.39	32:10	•
13C12-1,2,3,4,6,7,8-HpCDF	6.15	61.7	1.14	35:27	-
13C12-OCDD	4.54	45.5	0.96	41:40	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.14	85.9	22:48	-

`* Ratio	RT (min)	Flags
0.85	22:35	-
1.36	32:37	-
•	0.85	0.85 22:35

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265
Client Sample: DA-3 REPORT Ionics Sample: 3-65-17

Date collected: Sample size: 10.03 g File: F11428 3/23/95 Date received: 3/27/95 Matrix: Soil Ret check: F11425 Origin: Site G Daily cal: Date extracted: 3/30/95 F11426 Initial cal: F052394C Date analyzed: 4/13/95

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.02	-		U
1,2,3,7,8-PeCDD	ND	0.02	•		Ū
1,2,3,4,7,8-HxCDD	ND	0.08	-		U
1,2,3,6,7,8-HxCDD	ND	0.08	-		U
1,2,3,7,8,9-HxCDD	ND	0.08	-		U
1,2,3,4,6,7,8-HpCDD	2.86	0.03	0.98	37:05	
OCDD	30.45	0.10	0.91	41:48	
2,3,7,8-TCDF	0.04	0.01	0.85	22:12	J
1,2,3,7,8-PeCDF	ND	0.02	-		U
2,3,4,7,8-PeCDF	ND	0.02	-		U
1,2,3,4,7,8-HxCDF	0.10	0.02	1.36	31:04	J
1,2,3,6,7,8-HxCDF	ND	0.02 ↔	-		U
2,3,4,6,7,8-HxCDF	ND	0.02	-		U
1,2,3,7,8,9-HxCDF	ND	0.03	-		U
1,2,3,4,6,7,8-HpCDF	1.11	0.08	1.26	35:36	J
1,2,3,4,7,8,9-HpCDF	ND	0.10	•		U
OCDF	3.87	0.11	0.91	42:01	J

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.12	0.02	J
TOTAL PeCDD	Ö	ND	0.02	ŭ
TOTAL HXCDD	1	0.38	0.08	J
TOTAL HPCDD	2	5.63	0.03	
TOTAL TCDF	3	0.15	0.01	J
TOTAL PeCDF	0	ND	0.02	Ü
TOTAL HXCDF	2	0.37 '	0.03	J
TOTAL HPCDF	2	3.38	0.10	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168

Client Sample: DA-3

SAMPLE ANALYSIS

OC REPORT

Ionics Project: 95-265

Ionics Sample: 3-65-17

Date collected: 3/23/95 Sample size: 10.03 g File: F11428 Date received: 3/27/95 Matrix: Soil Ret check: F11425 Origin: Site G Daily cal: Date extracted: 3/30/95 F11426 Initial cal: F052394C Date analyzed: 4/13/95

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.45	69.3	0.84	22:11	•
13C12-2,3,7,8-TCDD	3.78	75.8	0.82	22:49	-
13C12-1,2,3,6,7,8-HxCDD	3.44	69.0	1.42	32:17	-
13C12-1,2,3,4,6,7,8-HpCDF	6.00	60.2	1.13	35:35	-
13C12-OCDD	3.62	36.3	0.98	41:48	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.11	84.7	22:50	-

Recovery standards	`` Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.84	22:37	-
13C12-1,2,3,7,8,9-HxCDD	1.42	32:44	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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TOXICITY EQUIVALENCE REPORT

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265 **Client Sample: QA-1** TEF REPORT Ionics Sample: 3-65-1 Sample size: 10.04 a File: Date collected: 3/23/95 F11447 Date received: 3/27/95 Matrix: Soil Ret check: F11438 Origin: Site G Daily cal: Date extracted: 3/30/95 F11439 Initial cal: Date analyzed: 4/14/95 F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	7.16	X	0.100	=	0.716
1,2,3,6,7,8-HxCDD	35.89	x	0.100	=	3.589
1,2,3,7,8,9-HxCDD	9.55	x	0.100	=	0.955
1,2,3,4,6,7,8-HpCDD	864.86	x	0.010	=	8.649
OCDD	26183.49	x	0.001	=	26.183
2,3,7,8-TCDF	1.93	x	0.100	=	0.193
1,2,3,7,8-PeCDF	2.65	x	0.050	=	0.133
2,3,4,7,8-PeCDF	3.83	x	0.500	=	1.916
1,2,3,4,7,8-HxCDF	68.72	X _=	0.100	=	6.872
1,2,3,6,7,8-HxCDF	26.09	x `*	0.100	=	2.609
2,3,4,6,7,8-HxCDF	18.74	x	0.100	=	1.874
1,2,3,7,8,9-HxCDF	12.93	x	0.100	=	1.293
1,2,3,4,6,7,8-HpCDF	509.26	x	0.010	=	5.093
1,2,3,4,7,8,9-HpCDF	53.49	x	0.010	=	0.535
OCDF	13559.65	x	0.001	=	13.560

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 74.17 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265 Client Sample: QA-2 Ionics Sample: 3-65-2 TEF REPORT Date collected: 3/23/95 Sample size: 10.07 g File: F11448 Matrix: Date received: 3/27/95 Soil Ret check: F11438 Date extracted: 3/30/95 Origin: Site G Daily cal: F11439 Initial cal: Date analyzed: 4/14/95 F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	×	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	1.77	x	0.100	=	0.177
1,2,3,6,7,8-HxCDD	8.99	Χ.	0.100	=	0.899
1,2,3,7,8,9-HxCDD	3.45	x	0.100	=	0.345
1,2,3,4,6,7,8-HpCDD	217.04	x	0.010	=	2.170
OCDD	5630.09	X	0.001	=	5.630
2,3,7,8-TCDF	1.65	x	0.100	=	0.165
1,2,3,7,8-PeCDF	2.49	x	0.050	=	0.125
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	26.98	X ¬	0.100	=	2.698
1,2,3,6,7,8-HxCDF	4.36	x 📏	0.100	=	0.436
2,3,4,6,7,8-HxCDF	2.58	x	0.100	=	0.258
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	120.60	X	0.010	=	1.206
1,2,3,4,7,8,9-HpCDF	10.21	x	0.010	=	0.102
OCDF	935.43	x	0.001	=	0.935

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 15.146 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-265 Client Sample: QA-3 TEF REPORT Ionics Sample: 3-65-3 Sample size: 10.02 g Date collected: 3/23/95 File: F11451 Matrix: Soil Date received: 3/27/95 Ret check: F11449 Origin: Site G Daily cal: Date extracted: 3/30/95 F11450 Date analyzed: 4/15/95 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDD	0.95	X	0.100	==	0.095
1,2,3,6,7,8-HxCDD	3.85	x	0.100	=	0.385
1,2,3,7,8,9-HxCDD	2.31	X	0.100	=	0.231
1,2,3,4,6,7,8-HpCDD	87.76	x	0.010	=	0.878
OCDD	2293.87	x	0.001	=	2.294
2,3,7,8-TCDF	0.30	x	0.100	=	0.030
1,2,3,7,8-PeCDF	ND	'X	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	2.65	Х _	0.100	=	0.265
1,2,3,6,7,8-HxCDF	1.48	X 🔨	0.100	=	0.148
2,3,4,6,7,8-HxCDF	1.25	X	0.100	=	0.125
1,2,3,7,8,9-HxCDF	ND	X	0.100	=	-
1,2,3,4,6,7,8-HpCDF	52.36	x	0.010	=	0.524
1,2,3,4,7,8,9-HpCDF	1.98	x	0.010	=	0.020
OCDF	319.89	x	0.001	=	0.320

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 5.315 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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Client Project: Client Sample		SAMPLE ANALYSIS TEF REPORT		•		ect: 95-265 ple: 3-65-4
Date collected:	3/23/95	Sample size:	10.04 g		File:	F11452
Date received:	3/27/95	Matrix:	Soil		Ret check:	F11449
Date extracted:	3/30/95	Origin:	Site G		Daily cal:	F11450
Date analyzed:	4/15/95				Initial cal:	F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	•
1,2,3,7,8-PeCDD	ND	×	0.500	=	-
1,2,3,4,7,8-HxCDD	0.63	x	0.100	=	0.063
1,2,3,6,7,8-HxCDD	2.41	x	0.100	=	0.241
1,2,3,7,8,9-HxCDD	1.74	x	0.100	=	0.174
1,2,3,4,6,7,8-HpCDD	59.84	x	0.010	=	0.598
OCDD	1465.50	x	0.001	=	1.465
2,3,7,8-TCDF	0.23	x	0.100	=	0.023
1,2,3,7,8-PeCDF	ND	x	0.050	=	•
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	2.02	Х ,~	0.100	=	0.202
1,2,3,6,7,8-HxCDF	1.31	x Sa	0.100	=	0.131
2,3,4,6,7,8-HxCDF	1.00	x	0.100	=	0.100
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	36.08	x	0.010	=	0.361
1,2,3,4,7,8,9-HpCDF	1.57	x	0.010	=	0.016
OCDF	206.24	X	0.001	=	0.206

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 3.58 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: QA-5		SAMPLE ANA TEF REPO		lonics Project: 95-265 lonics Sample: 3-65-5	
Date collected:	3/23/95	Sample size:	10.03 g	File:	F11414
Date received:	3/27/95	Matrix:	Soil	Ret check:	F11412
Date extracted:	3/30/95	Origin:	Site G	Daily cal:	F11413
Date analyzed:	4/13/95	-		Initial cal:	F052394C

Conc (ppb)		TEF		TEQ (ppb)
ND	x	1.000	=	-
ND	x	0.500	=	•
0.71	x	0.100	=	0.071
2.89	×	0.100	=	0.289
2.03	x	0.100	=	0.203
88.08	x	0.010	=	0.881
1436.28	X	0.001	=	1.436
0.18	x	0.100	=	0.018
ND	×	0.050	=	-
0.25	x	0.500	=	0.125
1.69	X-	0.100	=	0.169
0.80	x ['] ·	0.100	=	0.080
0.63	x	0.100	=	0.063
ND	x	0.100	=	-
35.24	x	0.010	=	0.352
1.92	x	0.010	=	0.019
211.02	X	0.001	=	0.211
	ND ND 0.71 2.89 2.03 88.08 1436.28 0.18 ND 0.25 1.69 0.80 0.63 ND 35.24 1.92	ND x ND x 0.71 x 2.89 x 2.03 x 88.08 x 1436.28 x 0.18 x ND x 0.25 x 1.69 x 0.80 x 0.63 x ND x 35.24 x 1.92 x	ND x 1.000 ND x 0.500 0.71 x 0.100 2.89 x 0.100 2.03 x 0.100 88.08 x 0.010 1436.28 x 0.001 0.18 x 0.001 ND x 0.050 0.25 x 0.500 1.69 x 0.100 0.80 x 0.100 0.80 x 0.100 0.63 x 0.100 ND x 0.100 0.63 x 0.100 0.64 x 0.100 0.65 x 0.100 0.65 x 0.100 0.66 x 0.100 0.67 x 0.100 0.68 x 0.100 0.69 x 0.100 0.69 x 0.100 0.60	ND

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 3.917 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: QA-6			SAMPLE ANALYSIS TEF REPORT			Ionics Project: 95-265 Ionics Sample: 3-65-6	
Date collected:	3/23/95	Sample size:	10.01 g		· File:	F11415	
Date received:	3/27/95	Matrix:	Soil		Ret check:	F11412	
Date extracted:	3/30/95	Origin:	Site G		Daily cal:	F11413	
Date analyzed:	4/13/95				Initial cal:	F052394C	

ND ND 0.36	x x	1.000 0.500	=	-
ND	X			
0.36		J.JJ	=	-
	X	0.100	=	0.036
2.18	x	0.100	=	0.218
1.12	x	0.100	=	0.112
61.42	x	0.010	=	0.614
1131.63	x	0.001	=	1.132
0.15	x	0.100	=	0.015
ND	x	0.050	=	-
ND	x	0.500	=	-
1.09	X	0.100	=	0.109
0.74	x `*	0.100	=	0.074
0.43	x	0.100	=	0.043
ND	X	0.100	=	-
24.87	X	0.010	=	0.249
ND	x	0.010	=	- ,
167.07	X	0.001	=	0.167
	1.12 61.42 1131.63 0.15 ND ND 1.09 0.74 0.43 ND 24.87 ND	1.12	1.12	1.12

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 2.769 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

Phone: (713) 972-1037

Client Project: 8168 SAMPLE ANALYSIS lonics Project: 95-265
Client Sample: QA-7 TEF REPORT lonics Sample: 3-65-7

Sample size: Date collected: 3/23/95 10.03 g File: F11416 3/27/95 Matrix: Soil Ret check: Date received: F11412 Date extracted: 3/30/95 Origin: Site G Daily cal: F11413 Initial cal: Date analyzed: 4/13/95 F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	 X	1.000	=	•
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	0.49	x	0.100	=	0.049
1,2,3,6,7,8-HxCDD	1.93	x ·	0.100	=	0.193
1,2,3,7,8,9-HxCDD	1.10	x	0.100	=	0.110
1,2,3,4,6,7,8-HpCDD	48.63	X	0.010	=	0.486
OCDD	915.27	X	0.001	=	0.915
2,3,7,8-TCDF _	0.21	x	0.100	=	0.021
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDF	1.20	X	0.100	=	0.120
1,2,3,6,7,8-HxCDF	0.75	x `*	0.100	=	0.075
2,3,4,6,7,8-HxCDF	0.51	x	0.100	=	0.051
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	23.28	x	0.010	=	0.233
1,2,3,4,7,8,9-HpCDF	1.22	x	0.010	=	0.012
OCDF	119.34	X	0.001	=	0.119

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 2.384 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: Client Sample		SAMPLE ANA TEF REPO		Ionics Project: 95-265 Ionics Sample: 3-65-8	
Date collected:	3/23/95	Sample size:	10.07 g	File:	F11417
Date received:	3/27/95	Matrix:	Soil	Ret check:	F11412
Date extracted:	3/30/95	Origin:	Site G	Daily cal:	F11413
Date analyzed:	4/13/95			Initial cal:	F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	==	-
1,2,3,4,7,8-HxCDD	0.43	X	0.100	==	0.043
1,2,3,6,7,8-HxCDD	2.34	x	0.100	=	0.234
1,2,3,7,8,9-HxCDD	0.89	x	0.100	=	0.089
1,2,3,4,6,7,8-HpCDD	63.45	x	0.010	=	0.635
OCDD	1272.54	x	0.001	=	1.273
2,3,7,8-TCDF -	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	1.30	X ,~	0.100	=	0.130
1,2,3,6,7,8-HxCDF	0.87	x ``*	0.100	=	0.087
2,3,4,6,7,8-HxCDF	0.49	x	0.100	=	0.049
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	27.66	x	0.010	=	0.277
1,2,3,4,7,8,9-HpCDF	1.43	x	0.010	=	0.014
OCDF	182.47	X	0.001	=	0.182

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 3.013 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: QA-9					ect: 95-265 ple: 3-65-9
Date collected:	3/23/95	Sample size:	10.04 g	File:	F11418
Date received:	3/27/95	Matrix:	Soil	Ret check:	F11412
Date extracted:	3/30/95	Origin:	Site G	Daily cal:	F11413
Date analyzed:	4/13/95			Initial cal:	F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	•
1,2,3,7,8-PeCDD	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDD	0.49	X	0.100	=	0.049
1,2,3,6,7,8-HxCDD	1.93	X	0.100	=	0.193
1,2,3,7,8,9-HxCDD	1.35	X	0.100	=	0.135
1,2,3,4,6,7,8-HpCDD	42.17	X	0.010	=	0.422
OCDD	984.88	x	0.001	=	0.985
2,3,7,8-TCDF -	0.26	x	0.100	=	0.026
1,2,3,7,8-PeCDF	ND	X	0.050	=	-
2,3,4,7,8-PeCDF	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDF	1.68	X	0.100	=	0.168
1,2,3,6,7,8-HxCDF	1.01	x ~~	0.100	=	0.101
2,3,4,6,7,8-HxCDF	0.59	X	0.100	=	0.059
1,2,3,7,8,9-HxCDF	ND	X	0.100	=	-
1,2,3,4,6,7,8-HpCDF	21.77	X	0.010	=	0.218
1,2,3,4,7,8,9-HpCDF	0.96	X	0.010	=	0.010
OCDF	118.49	X	0.001	=	0.118

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 2.484 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project Client Sample		SAMPLE ANALYSIS TEF REPORT		•	Ionics Proj Ionics Samp	ect: 95-265 ble: 3-65-10
Date collected:	3/23/95	Sample size:	10.06 g		File:	F11429
Date received:	3/27/95	Matrix:	Soil		Ret check:	F11425
Date extracted:	3/30/95	Origin:	Site G		Daily cal:	F11426
Date analyzed:	4/13/95				Initial cal:	F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	×	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	1.03	x	0.100	=	0.103
1,2,3,6,7,8-HxCDD	4.05	x	0.100	=	0.405
1,2,3,7,8,9-HxCDD	2.18	×	0.100	=	0.218
1,2,3,4,6,7,8-HpCDD	58.54	x	0.010	=	0.585
OCDD	1654.21	X	0.001	=	1.654
2,3,7,8-TCDF _	ND	x	0.100	=	•
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	4.87	X	0.100	=	0.487
1,2,3,6,7,8-HxCDF	1.70	x `*	0.100	=	0.170
2,3,4,6,7,8-HxCDF	1.57	×	0.100	=	0.157
1,2,3,7,8,9-HxCDF	0.99	x	0.100	=	0.099
1,2,3,4,6,7,8-HpCDF	40.48	x	0.010	=	0.405
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	243.23	x	0.001	=	0.243

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 4.526 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: WA-1		SAMPLE ANALYSIS TEF REPORT			Ionics Project: 95-265 Ionics Sample: 3-65-11		
Date collected:	3/23/95	Sample size:	10.07 g		File:	F11453	
Date received:	3/27/95	Matrix:	Soil		Ret check:	F11449	
Date extracted:	3/30/95	Origin:	Site G		Daily cal:	F11450	
Date analyzed:	4/15/95				Initial cal:	F052394C	

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDD	7.92	X	0.100	=	0.792
1,2,3,6,7,8-HxCDD	45.03	X	0.100	=	4.503
1,2,3,7,8,9-HxCDD	8.21	X	0.100	=	0.821
1,2,3,4,6,7,8-HpCDD	942.33	X	0.010	=	9.423
OCDD	27324.77	x	0.001	=	27.325
2,3,7,8-TCDF	1.15	x	0.100	=	0.115
1,2,3,7,8-PeCDF	ND	X	0.050	=	-
2,3,4,7,8-PeCDF	0.92	X	0.500	=	0.461
1,2,3,4,7,8-HxCDF	26.81	x ,≂	0.100	=	2.681
1,2,3,6,7,8-HxCDF	9.45	X	0.100	=	0.945
2,3,4,6,7,8-HxCDF	6.55	X	0.100	=	0.655
1,2,3,7,8,9-HxCDF	2.91	X	0.100	=	0.291
1,2,3,4,6,7,8-HpCDF	591.44	x	0.010	=	5.914
1,2,3,4,7,8,9-HpCDF	34.70	x	0.010	=	0.347
OCDF	13672.30	X	0.001	=	13.672

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 67.945 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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Client Project: 8168 Client Sample: WA-2					ect: 95-265 ble: 3-65-12
Date collected:	3/23/95	Sample size:	10.1 g	File:	F11430
Date received:	3/27/95	Matrix:	Soil	Ret check:	F11425
Date extracted:	3/30/95	Origin:	Site G	Daily cal:	F11426
Date analyzed:	4/13/95			Initial cal:	F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	0.74	×	0.500	=	0.368
1,2,3,4,7,8-HxCDD	4.78	×	0.100	=	0.478
1,2,3,6,7,8-HxCDD	20.72	X	0.100	==	2.072
1,2,3,7,8,9-HxCDD	8.16	x	0.100	=	0.816
1,2,3,4,6,7,8-HpCDD	491.45	x	0.010	=	4.915
OCDD	10579.19	x	0.001	=	10.579
2,3,7,8-TCDF _	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	7.11	X S	0.100	=	0.711
1,2,3,6,7,8-HxCDF	6.10	x `*	0.100	=	0.610
2,3,4,6,7,8-HxCDF	10.00	x	0.100	=	1.000
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	306.10	x	0.010	=	3.061
1,2,3,4,7,8,9-HpCDF	ND	×	0.010	=	-
OCDF	5556.74	x	0.001	=	5.557

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 30,167 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project Client Sample		SAMPLE ANALYSIS TEF REPORT		•		ect: 95-265 ble: 3-65-13
Date collected:	3/23/95	Sample size:	10.1 g		File:	F11422
Date received:	3/27/95	Matrix:	Soil		Ret check:	F11412
Date extracted:	3/30/95	Origin:	Site G		Daily cal:	F11413
Date analyzed:	4/13/95				Initial cal:	F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	
1,2,3,7,8-PeCDD	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDD	2.09	X	0.100	=	0.209
1,2,3,6,7,8-HxCDD	9.85	X	0.100	=	0.985
1,2,3,7,8,9-HxCDD	2.98	X	0.100	=	0.298
1,2,3,4,6,7,8-HpCDD	204.65	X	0.010	=	2.046
OCDD	5883.84	x	0.001	=	5.884
2,3,7,8-TCDF -	0.53	x	0.100	=	0.053
1,2,3,7,8-PeCDF	ND	X	0.050	=	-
2,3,4,7,8-PeCDF	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDF	9.92	X	0.100	=	0.992
1,2,3,6,7,8-HxCDF	5.42	х `*	0.100	=	0.542
2,3,4,6,7,8-HxCDF	2.93	X	0.100	=	0.293
1,2,3,7,8,9-HxCDF	ND	X	0.100	=	-
1,2,3,4,6,7,8-HpCDF	137.12	X	0.010	=	1.371
1,2,3,4,7,8,9-HpCDF	9.46	X	0.010	=	0.095
OCDF	1580.23	X	0.001	=	1.580

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 14.348 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project Client Sample		SAMPLE ANA TEF REPO		S Ionics Proj Ionics Sam		ect: 95-265 ble: 3-65-14
Date collected:	3/23/95	Sample size:	10.02 g		File:	F11423
Date received:	3/27/95	Matrix:	Soil		Ret check:	F11412
Date extracted:	3/30/95	Origin:	Site G		Daily cal:	F11413
Date analyzed:	4/13/95				Initial cal:	F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	_
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	1.24	x	0.100	=	0.124
1,2,3,6,7,8-HxCDD	4.07	x	0.100	=	0.407
1,2,3,7,8,9-HxCDD	1.97	x	0.100	=	0.197
1,2,3,4,6,7,8-HpCDD	69.25	x	0.010	=	0.693
OCDD	1641.75	x	0.001	=	1.642
2,3,7,8-TCDF -	0.19	x	0.100	=	0.019
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	2.62	X ~~	0.100	=	0.262
1,2,3,6,7,8-HxCDF	3.82	x `^	0.100	=	0.382
2,3,4,6,7,8-HxCDF	ND	×	0.100	=	-
1,2,3,7,8,9-HxCDF	2.26	×	0.100	=	0.226
1,2,3,4,6,7,8-HpCDF	65.52	×	0.010	=	0.655
1,2,3,4,7,8,9-HpCDF	1.74	X	0.010	=	0.017
OCDF	252.71	×	0.001	=	0.253

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 4.877 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

Phone: (713) 972-1037

Client Project: Client Sample		SAMPLE ANALYSIS TEF REPORT		•		ect: 95-265 de: 3-65-15
Date collected: Date received:	3/23/95 3/27/95	Sample size: Matrix:	10.03 g Soil		File: Ret check:	F11431 F11425
Date received: Date extracted: Date analyzed:	3/30/95 4/13/95	Origin:	Site G		Daily cal: Initial cal:	F11426 F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	1.74	x	1.000	=	1.738
1,2,3,7,8-PeCDD	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDD	70.10	X	0.100	=	7.010
1,2,3,6,7,8-HxCDD	237.87	x	0.100	=	23.787
1,2,3,7,8,9-HxCDD	122.76	x	0.100	=	12.276
1,2,3,4,6,7,8-HpCDD	2529.79	x	0.010	=	25.298
OCDD	19652.20	x	0.001	=	19.652
2,3,7,8-TCDF _	2.49	x	0.100	=	0.249
1,2,3,7,8-PeCDF	ND	x	0.050	==	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	84.52	Χ <u>,</u> ~	0.100	=	8.452
1,2,3,6,7,8-HxCDF	31.10	X	0.100	=	3.110
2,3,4,6,7,8-HxCDF	32.87	X	0.100	=	3.287
1,2,3,7,8,9-HxCDF	12.48	x	0.100	=	1.248
1,2,3,4,6,7,8-HpCDF	1832.21	x	0.010	=	18.322
1,2,3,4,7,8,9-HpCDF	115.26	x	0.010	=	1.153
OCDF	18103.05	X	0.001	==	18.103

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 143.685 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: DA-1				Ionics Proj Ionics Samp	ect: 95-265 ble: 3-65-16
Date collected:	3/23/95	Sample size:	10.02 g	File:	F11427
Date received:	3/27/95	Matrix:	Soil	Ret check:	F11425
Date extracted:	3/30/95	Origin:	Site G	Daily cal:	F11426
Date analyzed:	4/13/95			Initial cal:	F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	•
1,2,3,7,8-PeCDD	ND	x	0.500		-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	3.08	x	0.010	=	0.031
OCDD	36.55	X	0.001	=	0.037
2,3,7,8-TCDF -	0.05	x	0.100	=	0.005
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDF	0.06	X	0.100	=	0.006
1,2,3,6,7,8-HxCDF	ND	x 🔭	0.100	æ	•
2,3,4,6,7,8-HxCDF	ND	x	0.100	×=	•
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	0.87	x	0.010	=	0.009
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	,-
OCDF	4.03	X	0.001	=	0.004

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.092 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS
BY METHOD 8280

Client Project: 8168 Client Sample: DA-3		SAMPLE ANALYSIS TEF REPORT		Ionics Project: 95-265 Ionics Sample: 3-65-17		
Date collected:	3/23/95	Sample size:	10.03 g	File:	F11428	
Date received:	3/27/95	Matrix:	Soil	Ret check:	F11425	
Date extracted:	3/30/95	Origin:	Site G	Daily cal:	F11426	
Date analyzed:	4/13/95	-		Initial cal:	F052394C	

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	•
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	X -	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	X	0.100	=	•
1,2,3,4,6,7,8-HpCDD	2.86	x	0.010	=	0.029
OCDD	30.45	x	.0.001	=	0.030
2,3,7,8-TCDF	0.04	x	0.100	=	0.004
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	0.10	X	0.100	=	0.010
1,2,3,6,7,8-HxCDF	ND	x `^	0.100	=	•
2,3,4,6,7,8-HxCDF	ND	X	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	1.11	X	0.010	=	0.011
1,2,3,4,7,8,9-HpCDF	ND	X	0.010	=	-
OCDF	3.87	x	0.001	=	0.004

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.088 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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SUMMARY REPORT

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-307 Client Sample: OSD-1 SUMMARY REPORT Ionics Sample: 4-7-1

Specific analytes	San	ple	Blank		Lab spike	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
· · · ·						
2,3,7,8-TCDD	ND	0.05	ND	2.46	98%	50-150
1,2,3,7,8-PeCDD	ND	0.22	ND	6.62	106%	50-150
1,2,3,4,7,8-HxCDD	0.29	0.09	ND	ND	-	-
1,2,3,6,7,8-HxCDD	0.78	0.11	ND	5.76	92%	50-150
1,2,3,7,8,9-HxCDD	0.71	0.10	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	31.52	0.14	ND	5.51	88%	50-150
OCDD	483.05	1.75	ND	10.26	82%	50-150
2,3,7,8-TCDF	ND	0.03	ND	2.74	109%	50-150
1,2,3,7,8-PeCDF	ND	80.0	ND	7.01	112%	50-150
2,3,4,7,8-PeCDF	ND	0.09	ND	ND	-	-
1,2,3,4,7,8-HxCDF	0.21	0.14	ND	ND	-	-
1,2,3,6,7,8-HxCDF	ND	0.13	ND	6.23	100%	50-150
2,3,4,6,7,8-HxCDF	ND	0.14	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.16	ND	ND	_	-
1,2,3,4,6,7,8-HpCDF	9.10	0.26	ND	6.04	97%	50-150
1,2,3,4,7,8,9-HpCDF	0.56	0.33	ND	ND	-	-
OCDF	62.57	1.91	ND	10.31	82%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	,
TOTAL TCDD TOTAL PeCDD	0	ND ND	0.05 0.22	Total dioxins/furans
TOTAL HXCDD TOTAL HPCDD	5 2	3.61 38.70	0.11 0.14	629.06 ppb
TOTAL TCDF TOTAL PeCDF	1 2	0.08 0.88	0.03 0.09	2,3,7,8-TCDD toxicity equivalent
TOTAL HXCDF TOTAL HACDF	4 3	6.31 33.86	0.16 0.33	1.157 ppb

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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Client Project: 8168 Client Sample: OSD-2

SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-307 Ionics Sample: 4-7-2

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ND ND	0.08	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
ND		ND	0.40		
ND		I ND			
	0.04		2.46	98%	50-150
	0.21	ND ND	6.62	106%	50-150
ND	0.11	ND	ND	-	-
0.74	0.14	l ND	5.76	92%	50-150
ND	0.13	ND	ND	-	-
34.01	0.18	ND	5.51	88%	50-150
488.59	0.46	ND	10.26	82%	50-150
ND	0.05	ND.	274	100%	50-150
					50-150
				112/0	30-130
				-	-
				4000/	- 50.450
				100%	50-150
				-	-
ND	0.04	ND	ND	-	-
8.44	0.18	ND	6.04	97%	50-150
ND	0.22	ND	ND	-	-
64.75	0.38	ND	10.31	82%	50-150
	0.74 ND 34.01 488.59 ND ND ND ND ND ND ND ND ND	0.74	0.74 0.14 ND ND 0.13 ND 34.01 0.18 ND 488.59 0.46 ND ND 0.05 ND ND 0.07 ND ND 0.07 ND ND 0.03 ND ND 0.03 ND ND 0.03 ND ND 0.03 ND ND 0.04 ND 8.44 0.18 ND ND 0.22 ND	0.74 0.14 ND 5.76 ND 0.13 ND ND 34.01 0.18 ND 5.51 488.59 0.46 ND 10.26 ND 0.05 ND 2.74 ND 0.07 ND 7.01 ND 0.07 ND ND ND ND ND ND ND 0.03 ND ND ND 0.03 ND ND ND 0.03 ND ND ND 0.04 ND ND 8.44 0.18 ND 6.04 ND 0.22 ND ND	0.74 0.14 ND 5.76 92% ND 0.13 ND ND - 34.01 0.18 ND 5.51 88% 488.59 0.46 ND 10.26 82% ND 0.05 ND 2.74 109% ND 0.07 ND 7.01 112% ND ND ND - ND ND ND - ND 0.03 ND ND - ND 0.03 ND ND - ND 0.03 ND ND - ND 0.04 ND ND -

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TODD	2	0.06	0.00	Total diagram Managa
TOTAL DOCUMENT	_	0.26	0.08	Total dioxins/furans
TOTAL PeCDD	0	ND	0.21	
TOTAL HXCDD	4	4.59	0.14	630.28 ppb
TOTAL HPCDD	2	32.26	0.18	
	_			
TOTAL TODF	0	ND	0.05	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	0	ND	0.07	
TOTAL HXCDF	4	5.09	0.04	1.052 ppb
TOTAL HpCDF	2	34.74	0.22	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: OSD-3 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-307 lonics Sample: 4-7-3

Phone: (713) 972-1037

Sample		Blank	Lab spike		
Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
	0.00		0.40	000/	E0 4E0
1					50-150
ŀ		1		106%	50-150
1.04	0.24	ND ND	ND	-	-
2.47	0.29	ND	5.76	92%	50-150
1.62	0.28	ND	ND	-	-
86.57	0.26	ND	5.51	88%	50-150
1803.45	2.09	ND	10.26	82%	50-150
0.73	80.0	ND	2.74	109%	50-150
0.83	0.17	ND	7.01	112%	50-150
ND	0.17	ND	ND	-	-
5.10	0.16	ND	ND	-	-
1.49	0.15	ND	6.23	100%	50-150
0.43	0.16	ND	ND	•	-
0.98	0.19	ND	ND	-	-
39.85	0.43	ND	6.04	97%	50-150
6.03	0.55	ND	ND	-	-
573.57	1.46	ND	10.31	82%	50-150
	ND ND 1.04 2.47 1.62 86.57 1803.45 0.73 0.83 ND 5.10 1.49 0.43 0.98 39.85 6.03	ND 0.06 ND 0.23 1.04 0.24 2.47 0.29 1.62 0.28 86.57 0.26 1803.45 2.09 0.73 0.08 0.83 0.17 ND 0.17 5.10 0.16 1.49 0.15 0.43 0.16 0.98 0.19 39.85 0.43 6.03 0.55	Conc (ppb) DL (ppb) Conc (ppb) ND 0.06 ND ND 0.23 ND 1.04 0.24 ND 2.47 0.29 ND 1.62 0.28 ND 86.57 0.26 ND 1803.45 2.09 ND 0.73 0.08 ND 0.83 0.17 ND ND 0.17 ND 5.10 0.16 ND 1.49 0.15 ND 0.43 0.16 ND 0.98 0.19 ND 39.85 0.43 ND 6.03 0.55 ND	ND 0.06 ND 2.46 ND 0.23 ND 6.62 1.04 0.24 ND ND 2.47 0.29 ND 5.76 1.62 0.28 ND ND 86.57 0.26 ND 5.51 1803.45 2.09 ND 10.26 0.73 0.08 ND 2.74 0.83 0.17 ND 7.01 ND 0.17 ND ND 5.10 0.16 ND ND 1.49 0.15 ND 6.23 0.43 0.16 ND ND 0.98 0.19 ND ND 39.85 0.43 ND 6.04 6.03 0.55 ND ND	Conc (ppb) DL (ppb) Conc (ppb) Conc (ppb) Rec (%) ND 0.06 ND 2.46 98% ND 0.23 ND 6.62 106% 1.04 0.24 ND ND - 2.47 0.29 ND 5.76 92% 1.62 0.28 ND ND - 86.57 0.26 ND 5.51 88% 1803.45 2.09 ND 10.26 82% 0.73 0.08 ND 2.74 109% 0.83 0.17 ND 7.01 112% ND 0.17 ND ND - 5.10 0.16 ND ND - 1.49 0.15 ND 6.23 100% 0.43 0.16 ND ND - 0.98 0.19 ND ND - 39.85 0.43 ND 6.04 97% <td< td=""></td<>

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	1	0.37	0.06	Total dioxins/furans
TOTAL PeCDD	0	ND	0.23	
TOTAL HXCDD	5	9.88	0.29	2600.85 ppb
TOTAL HPCDD	2	72.28	0.26	
TOTAL TCDF	4	0.64	0.08	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	2	2.39	0.17	• •
TOTAL HXCDF	8	29.85	0.19	5.129 ppb
TOTAL HPCDF	4	108.42	0.55	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS REPORT

Client Project: 8168 Client Sample: OSD-1 SAMPLE ANALYSIS REPORT Ionics Project: 95-307 Ionics Sample: 4-7-1

Date collected:

5/11/95 5/12/95 Sample size: Matrix: 10.4 g Soil File: Ret check: F11720 F11715

Date received:
Date extracted:
Date analyzed:

5/19/95 6/5/95 Origin:

Site G Daily cal:

Daily cal: F11716 Initial cal: F052595C

Phone: (713) 972-1037

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.05	-		U
1,2,3,7,8-PeCDD	ND	0.22	-		U
1,2,3,4,7,8-HxCDD	0.29	0.09	1.32	31:38	J
1,2,3,6,7,8-HxCDD	0.78	0.11	1.24	31:43	J
1,2,3,7,8,9-HxCDD	0.71	0.10	1.43	32:10	J
1,2,3,4,6,7,8-HpCDD	31.52	0.14	0.99	36:31	
OCDD	483.05	1.75	0.87	41:19	E
2,3,7,8-TCDF	ND	0.03	-		U
1,2,3,7,8-PeCDF	ND	0.08	-		U
2,3,4,7,8-PeCDF	ND	0.09	-		U
1,2,3,4,7,8-HxCDF	0.21	0.14	1.37	30:34	J
1,2,3,6,7,8-HxCDF	ND	0.13	-		U
2,3,4,6,7,8-HxCDF	ND	0.14	-		U
1,2,3,7,8,9-HxCDF	ND	0.16	-		U
1,2,3,4,6,7,8-HpCDF	9.10	0.26	1.05	35:02	
1,2,3,4,7,8,9-HpCDF	0.56	0.33	1.12	37:10	J
OCDF	62.57	1.91	0.96	41:27	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TODD	0	ND	0.05	U
TOTAL PeCDD	Ō	ND	0.22	Ū
TOTAL HxCDD	5	3.61	0.11	
TOTAL HPCDD	2	38.70	0.14	
TOTAL TCDF	1	0.08	0.03	J
TOTAL PeCDF	2	0.88	0.09	J
TOTAL HXCDF	4	6.31	0.16	
TOTAL HpCDF	3	33.86	0.33	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

Client Project: 8168 SAMPLE ANALYSIS lonics Project: 95-307 Client Sample: OSD-1 QC REPORT lonics Sample: 4-7-1

Date collected: 5/11/95 Sample size: 10.4 g File: F11720 Date received: 5/12/95 Matrix: Soil Ret check: F11715 5/19/95 Origin: Site G Daily cal: F11716 Date extracted: 6/5/95 Initial cal: F052595C Date analyzed:

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.13	65.1	0.79	21:37	-
13C12-2,3,7,8-TCDD	3.53	73.4	0.80	22:16	-
13C12-1,2,3,6,7,8-HxCDD	2.94	61.1	1.18	31:43	-
13C12-1,2,3,4,6,7,8-HpCDF	4.98	51.8	1.15	35:01	-
13C12-OCDD	4.54	47.2	0.94	41:17	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.32	96.6	22:17	-

Recovery standards	Ratio	RT (min)	Flags
			_
13C12-1,2,3,4-TCDD	0.86	22:03	-
13C12-1,2,3,7,8,9-HxCDD	1.27	32:09	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

SAMPLE ANALYSIS Client Project: 8168 Ionics Project: 95-307 Client Sample: OSD-2 Ionics Sample: 4-7-2 REPORT

Date collected: 5/11/95 Sample size: 10.05 g File: F11721 Date received: 5/12/95 Matrix: Soil Ret check: F11715 Site G Date extracted: 5/19/95 Origin: Daily cal: F11716

Initial cal: Date analyzed: 6/5/95 F052595C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	80.0	-		U
1,2,3,7,8-PeCDD	ND	0.21	-		U
1,2,3,4,7,8-HxCDD	ND	0.11	-		U
1,2,3,6,7,8-HxCDD	0.74	0.14	1.26	31:47	J
1,2,3,7,8,9-HxCDD	ND	0.13	-		U
1,2,3,4,6,7,8-HpCDD	34.01	0.18	1.01	36:31	
OCDD	488.59	0.46	0.86	41:19	E
2,3,7,8-TCDF	ND	0.05	-		υ
1,2,3,7,8-PeCDF ~	ND	0.07	-		U
2,3,4,7,8-PeCDF	ND	0.07	-		U
1,2,3,4,7,8-HxCDF	ND	0.03	-		U
1,2,3,6,7,8-HxCDF	ND	0.03	-		U
2,3,4,6,7,8-HxCDF	ND	0.03	-		U
1,2,3,7,8,9-HxCDF	ND	0.04	-		U
1,2,3,4,6,7,8-HpCDF	8.44	0.18	1.13	35:05	
1,2,3,4,7,8,9-HpCDF	ND	0.22	-		U
OCDF	64.75	0.38	0.92	41:27	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TODD	2	0.26	0.08	J
TOTAL PeCDD	0	ND	0.21	U
TOTAL HxCDD	4	4.59	0.14	
TOTAL HPCDD	2	32.26	0.18	
TOTAL TCDF	0	ND	0.05	U
TOTAL PeCDF	0	ND	0.07	U
TOTAL HXCDF	4	5.09 ,	0.04	•
TOTAL HpCDF	2	34.74	0.22	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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Client Project: 8168 SAMPLE ANALYSIS lonics Project: 95-307 Client Sample: OSD-2 QC REPORT lonics Sample: 4-7-2

Date collected: 5/11/95 Sample size: 10.05 q File: F11721 Matrix: Soil F11715 Date received: 5/12/95 Ret check: Origin: Daily cal: Date extracted: 5/19/95 Site G F11716 Date analyzed: 6/5/95 Initial cal: F052595C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.18	63.9	0.80	21:42	-
13C12-2,3,7,8-TCDD	3.65	73.3	0.82	22:20	-
13C12-1,2,3,6,7,8-HxCDD	2.77	55.6	1.32	31:45	-
13C12-1,2,3,4,6,7,8-HpCDF	4.85	48.8	1.17	35:04	-
13C12-OCDD	3.49	35.0	0.99	41:17	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.38	95.6	22:21	-

Ratio	RT (min)	Flags
0.90	22:07	-
1.21	32:13	-
	0.90	0.90 22:07

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-307 **Client Sample: OSD-3** REPORT Ionics Sample: 4-7-3 Date collected: 5/11/95 Sample size: 10.4 g File: F11722 Date received: 5/12/95 Matrix: Soil Ret check: F11715 Origin: Site G Daily cal: F11716 Date extracted: 5/19/95 6/5/95 Initial cal: F052595C Date analyzed:

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.06	-		U
1,2,3,7,8-PeCDD	ND	0.23	-		U
1,2,3,4,7,8-HxCDD	1.04	0.24	1.24	31:35	J
1,2,3,6,7,8-HxCDD	2.47	0.29	1.42	31:42	
1,2,3,7,8,9-HxCDD	1.62	0.28	1.30	32:10	J
1,2,3,4,6,7,8-HpCDD	86.57	0.26	0.97	36:29	Ε
OCDD	1803.45	2.09	0.86	41:12	E
2,3,7,8-TCDF	0.73	0.08	0.74	21:39	J
1,2,3,7,8-PeCDF	0.83	0.17	1.80	26:38	J
2,3,4,7,8-PeCDF	ND	0.17	-		U
1,2,3,4,7,8-HxCDF	5.10	0.16	1.16	30:31	
1,2,3,6,7,8-HxCDF	1.49	0.15	1.16	30:40	J
2,3,4,6,7,8-HxCDF	0.43	0.16	1.03	31:25	J
1,2,3,7,8,9-HxCDF	0.98	0.19	1.28	32:36	J
1,2,3,4,6,7,8-HpCDF	39.85	0.43	1.06	35:01	
1,2,3,4,7,8,9-HpCDF	6.03	0.55	1.12	37:04	
OCDF	573.57	1.46	0.90	41:20	Ε

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
				<u> </u>
TOTAL TODD	1	0.37	0.06	J
TOTAL PeCDD	0	ND	0.23	U
TOTAL HXCDD	5	9.88	0.29	
TOTAL HPCDD	2	72.28	0.26	E
TOTAL TCDF	4	0.64	0.08	J
TOTAL PeCDF	2	2.39	0.17	
TOTAL HXCDF	8	29.85,	0.19	
TOTAL HpCDF	4	108.42	0.55	E

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

Phone: (713) 972-1037

Client Project Client Sample					ect: 95-307 mple: 4-7-3
Date collected:	5/11/95	Sample size:	10.4 g	File:	F11722
Date received:	5/12/95	Matrix:	Soil	Ret check:	F11715
Date extracted:	5/19/95	Origin:	Site G	Daily cal:	F11716
Date analyzed:	6/5/95	-		Initial cal:	F052595C

internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.19	66.3	0.79	21:38	-
13C12-2,3,7,8-TCDD	8.10	168.6	0.69	22:16	Υ
13C12-1,2,3,6,7,8-HxCDD	3.04	63.2	1.23	31:42	-
13C12-1,2,3,4,6,7,8-HpCDF	4.63	48.2	1.13	35:00	-
13C12-OCDD	1.27	13.3	0.92	41:11	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.81	116.9	22:17	-

		Flags
0.90	22:04	_
1.36	32:09	-
	0.90 1.36	

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occuring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

Phone: (713) 972-1037

TOXICITY EQUIVALENCE REPORT

Client Project: 8168 Client Sample: OSD-1		SAMPLE ANA TEF REPO		Ionics Project: 95-307 Ionics Sample: 4-7-1		
Date collected:	5/11/95	Sample size:	10.4 g	File:	F11720	
Date received:	5/12/95	Matrix:	Soil	Ret check:	F11715	
Date extracted:	5/19/95	Origin:	Site G	Daily cal:	F11716	
Date analyzed:	6/5/95			Initial cal:	F052595C	

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	0.29	x	0.100	=	0.029
1,2,3,6,7,8-HxCDD	0.78	X.	0.100	=	0.078
1,2,3,7,8,9-HxCDD	0.71	x	0.100	=	0.071
1,2,3,4,6,7,8-HpCDD	31.52	x	0.010	=	0.315
OCDD	483.05	x	<i>-</i> 0.001	=	0.483
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	0.21	x	0.100	=	0.021
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	9.10	x	0.010	=	0.091
1,2,3,4,7,8,9-HpCDF	0.56	X	0.010	=	0.006
OCDF	62.57	X	0.001	=	0.063

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 1.157 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

Phone: (713) 972-1037

Client Project Client Sample		SAMPLE ANA TEF REPO			ect: 95-307 mple: 4-7-2
Date collected:	5/11/95	Sample size:	10.05 g	File:	F11721
Date received:	5/12/95	Matrix:	Soil	Ret check:	F11715
Date extracted:	5/19/95	Origin:	Site G	Daily cal:	F11716
Date analyzed:	6/5/95			Initial cal:	F052595C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	0.74	x	0.100	=	0.074
1,2,3,7,8,9-HxCDD	ND	X	0.100	=	-
1,2,3,4,6,7,8-HpCDD	34.01	x	0.010	=	0.340
OCDD	488.59	x	0.001	=	0.489
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	×	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	X	0.100	=	-
1,2,3,4,6,7,8-HpCDF	8.44	x	0.010	=	0.084
1,2,3,4,7,8,9-HpCDF	ND	X	0.010	=	-
OCDF	64.75	X	0.001	=	0.065

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 1.052 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

Phone: (713) 972-1037

Client Project Client Sample		SAMPLE ANA TEF REPO		Ionics Proj Ionics Sa	ect: 95-307 mple: 4-7-3
Date collected:	5/11/95	Sample size:	10.4 g	File:	F11722
Date received:	5/12/95	Matrix:	Soil	Ret check:	F11715
Date extracted:	5/19/95	Origin:	Site G	Daily cal:	F11716
Date analyzed:	6/5/95			Initial cal:	F052595C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDD	1.04	X	0.100	=	0.104
1,2,3,6,7,8-HxCDD	2.47	x	0.100	=	0.247
1,2,3,7,8,9-HxCDD	1.62	Х	0.100	=	0.162
1,2,3,4,6,7,8-HpCDD	86.57	х	0.010	=	0.866
OCDD	1803.45	x	0.001	=	1.803
2,3,7,8-TCDF	0.73	x	0.100	=	0.073
1,2,3,7,8-PeCDF	0.83	X	0.050	=	0.041
2,3,4,7,8-PeCDF	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDF	5.10	X	0.100	=	0.510
1,2,3,6,7,8-HxCDF	1.49	X	0.100	=	0.149
2,3,4,6,7,8-HxCDF	0.43	Х	0.100	=	0.043
1,2,3,7,8,9-HxCDF	0.98	x	0.100	=	0.098
1,2,3,4,6,7,8-HpCDF	39.85	X	0.010	=	0.399
1,2,3,4,7,8,9-HpCDF	6.03	X	0.010	=	0.060
OCDF	573.57	X	0.001	=	0.574

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 5.129 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

Phone: (713) 972-1037

TOXICITY EQUIVALENCE REPORT

Client Project: Client Sample		SAMPLE ANA TEF REPO			ect: 95-307 mple: 4-7-1
Date collected:	5/11/95	Sample size:	10.4 g	File:	F11720
Date received:	5/12/95	Matrix:	Soil	Ret check:	F11715
Date extracted:	5/19/95	Origin:	Site G	Daily cal:	F11716
Date analyzed:	6/5/95			Initial cal:	F052595C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	0.29	x	0.100	=	0.029
1,2,3,6,7,8-HxCDD	0.78	x	0.100	=	0.078
1,2,3,7,8,9-HxCDD	0.71	x	0.100	=	0.071
1,2,3,4,6,7,8-HpCDD	31.52	x	0.010	=	0.315
OCDD	483.05	x	0.001	=	0.483
2,3,7,8-TCDF	ND	x	0.100	=	
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	0.21	x	0.100	=	0.021
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	9.10	X	0.010	=	0.091
1,2,3,4,7,8,9-HpCDF	0.56	X	0.010	=	0.006
OCDF	62.57	x	0.001	=	0.063

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 1.157 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

Phone: (713) 972-1037

Client Project Client Sample		SAMPLE ANA TEF REPO			ect: 95-307 mple: 4-7-2
Date collected:	5/11/95	Sample size:	10.05 g	File:	F11721
Date received:	5/12/95	Matrix:	Soil	Ret check:	F11715
Date extracted:	5/19/95	Origin:	Site G	Daily cal:	F11716
Date analyzed:	6/5/95			Initial cal:	F052595C

Specific analytes	Conc (ppb)		TEF	TEQ (ppb	
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	0.74	x	0.100	=	0.074
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	34.01	x	0.010	=	0.340
OCDD	488.59	x	0.001	=	0.489
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	8.44	X	0.010	=	0.084
1,2,3,4,7,8,9-HpCDF	ND	X	0.010	=	-
OCDF	64.75	X	0.001	=	0.065

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 1.052 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

Phone: (713) 972-1037

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-307 Client Sample: OSD-3 TEF REPORT Ionics Sample: 4-7-3 5/11/95 Sample size: File: F11722 Date collected: 10.4 g Date received: 5/12/95 Matrix: Soil Ret check: F11715 Origin: Site G Daily cal: Date extracted: 5/19/95 F11716 Initial cal: Date analyzed: 6/5/95 F052595C

Specific analytes	Conc (ppb)	******************************	TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDD	1.04	X	0.100	=	0.104
1,2,3,6,7,8-HxCDD	2.47	x	0.100	=	0.247
1,2,3,7,8,9-HxCDD	1.62	X	0.100	=	0.162
1,2,3,4,6,7,8-HpCDD	86.57	x	0.010	=	0.866
OCDD	1803.45	X	0.001	=	1.803
2,3,7,8-TCDF ~	0.73	x	0.100	=	0.073
1,2,3,7,8-PeCDF	0.83	X	0.050	=	0.041
2,3,4,7,8-PeCDF	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDF	5.10	X	0.100	=	0.510
1,2,3,6,7,8-HxCDF	1.49	×	0.100	=	0.149
2,3,4,6,7,8-HxCDF	0.43	x	0.100	=	0.043
1,2,3,7,8,9-HxCDF	0.98	x	0.100	=	0.098
1,2,3,4,6,7,8-HpCDF	39.85	X	0.010	=	0.399
1,2,3,4,7,8,9-HpCDF	6.03	X	0.010	==	0.060
OCDF	573.57	X	0.001	=	0.574

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 5.129 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

Phone: (713) 972-1037

Sauget Areal Site 6. 1995 Dioxin Data (BALQC is in file room)

(COPY)
SUMMARY REPORT

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-1

SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-288 Ionics Sample: 3-91-11

Phone: (713) 972-1037

Fax: (713) 784-1152

Specific analytes	Sample		Blank	Lab spike			
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits	
2,3,7,8-TCDD	ND	0.05	ND	2.32	93%	50-150	
1,2,3,7,8-PeCDD	ND	0.29	ND	6.01	96%	50-150	
1,2,3,4,7,8-HxCDD	ND	0.35	ND	ND	-	-	
1,2,3,6,7,8-HxCDD	ND	0.37	ND	6.80	109%	50-150	
1,2,3,7,8,9-HxCDD	ND	0.36	ND	ND	-	-	
1,2,3,4,6,7,8-HpCDD	5.33	0.28	ND	3.99	64%	50-150	
OCDD	48.31	0.43	ÑĎ	11.10	89%	50-150	
2,3,7,8-TCDF	ND	0.09	ND	2.56	102%	50-150	
1,2,3,7,8-PeCDF	ND	0.10	ND	6.53	105%	50-150	
2,3,4,7,8-PeCDF	ND	0.10	ND	ND	-	-	
1,2,3,4,7,8-HxCDF	ND	0.20	ND	ND	-	-	
1,2,3,6,7,8-HxCDF-	ND	0.20	ND	7.63	122%	50-150	
2,3,4,6,7,8-HxCDF	ND	0.23	ND	ND	-	•	
1,2,3,7,8,9-HxCDF	ND	0.25	ND	ND	•	-	
1,2,3,4,6,7,8-HpCDF	ND	0.40	ND	11.06	177%	50-150	
1,2,3,4,7,8,9-HpCDF	ND	0.47	ND	ND	•	-	
OCDF	9.09	0.15	ND	11.25	90%	50-150	

DL (ppb)	Conc (ppb)	Number	Total analytes*
0.05	ND	0	TOTAL TCDD
0.29	ND	0	TOTAL PeCDD
0.37	ND	0	TOTAL HXCDD
0.28	10.23	2	TOTAL HPCDD
0.09	ND	0	TOTAL TCDF
0.10	ND	0	TOTAL PeCDF
0.25	14.12	2	TOTAL HXCDF
0.47	7.18	1	TOTAL HpCDF
05 29 37 28 09 10 25	0. 0. 0. 0.	ND 0. ND 0. ND 0. 10.23 0. ND 0. ND 0. ND 0. 14.12 0.	0 ND 0. 0 ND 0. 0 ND 0. 2 10.23 0. 0 ND 0. 0 ND 0. 2 ND 0. 2 14.12 0.

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

IONICS INTERNATIONAL, INC. (800) 4-DIOXIN

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-3 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-288 Ionics Sample: 3-88-5

Phone: (713) 972-1037

analytes	Sam	ple	Blank	Lab spike			
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits	
TCDD	ND	0.04	ND	2.54	102%	50-150	
3-PeCDD	ND	0.21	ND	6.59	106%	50-150	
7,8-HxCDD	ND	0.30	ND	ND	-	-	
7,8-HxCDD	ND	0.31	ND	6.95	111%	50-150	
3,9-HxCDD	ND	0.31	ND	ND	-	-	
6,7,8-HpCDD	2.29	0.19	ND	6.54	105%	50-150	
•	28.69	0.32	ND.	11.29	90%	50-150	
TCDF	ND	0.07	ND	2.80	112%	50-150	
B-PeCDF	ND	0.07	ND	6.84	109%	50-150	
B-PeCDF	ND	0.07	ND	ND	•	-	
7,8-HxCDF	ND	0.13	ND	ND	-	-	
7,8-HxCDF	ND	0.13	ND	6.56	105%	50-150	
7,8-HxCDF	ND	0.15	ND	ND	-	-	
3,9-HxCDF	ND	0.16	ND	ND	-	-	
6,7,8-HpCDF	ND	0.51	ND	6.39	102%	50-150	
7,8,9-HpCDF	ND	0.61	ND	ND	-	•	
	2.74	0.17	ND	11.21	90%	50-150	
•	2.74	0.17	ND	11.21	90%	50	

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TODD	1	0.13	0.04	Total dioxins/furans
TOTAL PeCDD	0	ND	0.21	
TOTAL HXCDD	0	ND	0.31	37.41 ppb
TOTAL HPCDD	2	4.80	0.19	
TOTAL TCDF	0	ND	0.07	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	0	ND	0.07	
TOTAL HXCDF	0	ND	0.16	0.055 ppb
TOTAL HpCDF	1	1.06	0.61	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-5 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-288 Ionics Sample: 3-88-7

Phone: (713) 972-1037

Specific analytes	Sam	ple	Blank	Lab spike			
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits	
						_	
2,3,7,8-TCDD	ND	0.06	ND	2.54	102%	50-150	
1,2,3,7,8-PeCDD	ND	0.31	ND	6.59	106%	50-150	
1,2,3,4,7,8-HxCDD	ND	0.21	ND	ND	-	-	
1,2,3,6,7,8-HxCDD	ND	0.22	ND	6.95	111%	50-150	
1,2,3,7,8,9-HxCDD	ND	0.22	ND	ND	-	-	
1,2,3,4,6,7,8-HpCDD	3.94	0.27	ND	6.54	105%	50-150	
OCDD	52.79	0.56	ND	11.29	90%	50-150	
	1			1			
2,3,7,8-TCDF	ND	0.06	ND	2.80	112%	50-150	
1,2,3,7,8-PeCDF	ND	0.09	ND	6.84	109%	50-150	
2,3,4,7,8-PeCDF	ND	0.10	ND	ND	-	-	
1,2,3,4,7,8-HxCDF	ND	0.20	ND	ND	-	-	
1,2,3,6,7,8-HxCDF.	ND	0.19	ND	6.56	105%	50-150	
2,3,4,6,7,8-HxCDF	ND	0.22	ND	ND	-	-	
1,2,3,7,8,9-HxCDF	ND	0.25	ND	ND	-	-	
1,2,3,4,6,7,8-HpCDF	1.52	0.30	ND	6.39	102%	50-150	
1,2,3,4,7,8,9-HpCDF	ND	0.36	ND	ND	-	-	
OCDF	5.69	0.15	ND	11.21	90%	50-150	

DL (ppb)	Conc (ppb)	Number	Total analytes*
0.06	ND	0	TOTAL TCDD
0.31	ND	0	TOTAL PeCDD
0.22	ND	0	TOTAL HXCDD
0.27	7.75	2	TOTAL HpCDD
0.06	ND	0	TOTAL TCDF
0.10	ND	0	TOTAL PeCDF
0.25	ND	0	TOTAL HXCDF
0.36	4.89	2	TOTAL HpCDF
	0.06 0.31 0.22 0.27 0.06 0.10 0.25	ND 0.06 ND 0.31 ND 0.22 7.75 0.27 ND 0.06 ND 0.10 ND 0.25	0 ND 0.06 0 ND 0.31 0 ND 0.22 2 7.75 0.27 0 ND 0.06 0 ND 0.10 0 ND 0.25

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-7 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-288 Ionics Sample: 3-88-2

Phone: (713) 972-1037

Specific analytes	Sam	Sample		Lab spike			
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits	
2,3,7,8-TCDD	ND	0.11	ND	2.54	102%	50-150	
1,2,3,7,8-PeCDD	ND	0.15	ND	6.59	106%	50-150	
1,2,3,4,7,8-HxCDD	ND	0.26	ND	ND	•	-	
1,2,3,6,7,8-HxCDD	ND	0.27	ND	6.95	111%	50-150	
1,2,3,7,8,9-HxCDD	ND	0.26	ND	ND	-	-	
1,2,3,4,6,7,8-HpCDD	9.99	0.12	ND	6.54	105%	50-150	
OCDD	133.93	0.27	ND	11.29	90%	50-150	
2,3,7,8-TCDF	ND	0.02	ND	2.80	112%	50-150	
1,2,3,7,8-PeCDF	ND	0.06	ND	6.84	109%	50-150	
2,3,4,7,8-PeCDF	ND	0.07	ND	ND	-	-	
1,2,3,4,7,8-HxCDF	ND	0.19	ND	ND	-	-	
1,2,3,6,7,8-HxCDF	ND	0.18	ND	6.56	105%	50-150	
2,3,4,6,7,8-HxCDF	ND	0.22	ND	ND	•	-	
1,2,3,7,8,9-HxCDF	ND	0.24	ND	ND	•	-	
1,2,3,4,6,7,8-HpCDF	2.82	0.70	ND	6.39	102%	50-150	
1,2,3,4,7,8,9-HpCDF	ND	0.83	ND	ND	-	-	
OCDF	11.65	0.20	ND	11.21	90%	50-150	
			1	j			

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TCDD	0	ND	0.11	Total dioxins/furans
TOTAL PeCDD	0	ND	0.15	
TOTAL HXCDD	2	1.17	0.27	177.54 ppb
TOTAL HPCDD	2	18.28	0.12	
TOTAL TCDF	0	ND	0.02	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	0	ND	0.07	
TOTAL HXCDF	1	0.96	0.24	0.274 ppb
TOTAL HPCDF	2	11.55	0.83	••

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-9 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-288 Ionics Sample: 3-88-11

Phone: (713) 972-1037

Conc (ppb) DL (ppb) Conc (ppb) Rec (%) QC limits	Specific analytes	Sam	Sample		Lab spike			
1,2,3,7,8-PeCDD ND 0.24 ND 6.59 106% 50-150 1,2,3,4,7,8-HxCDD ND 0.18 ND ND - - 1,2,3,6,7,8-HxCDD 1.02 0.19 ND 6.95 111% 50-150 1,2,3,7,8,9-HxCDD ND 0.18 ND ND - - 1,2,3,4,6,7,8-HpCDD 13.45 0.23 ND 6.54 105% 50-150 0CDD 163.07 0.30 ND 11.29 90% 50-150 2,3,7,8-TCDF ND 0.05 ND 2.80 112% 50-150 2,3,7,8-PeCDF ND 0.08 ND 6.84 109% 50-150 2,3,4,7,8-PeCDF ND 0.09 ND ND - - 1,2,3,4,7,8-PeCDF ND 0.09 ND ND - - 1,2,3,4,7,8-HxCDF ND 0.25 ND ND - - 1,2,3,6,7,8-HxCDF ND 0.25 ND ND - - 1,2,3,7,8,9-HxCDF ND <td< th=""><th></th><th>Conc (ppb)</th><th>DL (ppb)</th><th>Conc (ppb)</th><th>Conc (ppb)</th><th></th><th>QC limits</th></td<>		Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)		QC limits	
1,2,3,7,8-PeCDD ND 0.24 ND 6.59 106% 50-150 1,2,3,4,7,8-HxCDD ND 0.18 ND ND - - 1,2,3,6,7,8-HxCDD 1.02 0.19 ND 6.95 111% 50-150 1,2,3,7,8,9-HxCDD ND 0.18 ND ND - - 1,2,3,4,6,7,8-HpCDD 13.45 0.23 ND 6.54 105% 50-150 0CDD 163.07 0.30 ND 11.29 90% 50-150 2,3,7,8-TCDF ND 0.05 ND 2.80 112% 50-150 2,3,7,8-PeCDF ND 0.08 ND 6.84 109% 50-150 2,3,4,7,8-PeCDF ND 0.09 ND ND - - 1,2,3,4,7,8-PeCDF ND 0.09 ND ND - - 1,2,3,4,7,8-HxCDF ND 0.25 ND ND - - 1,2,3,6,7,8-HxCDF ND 0.25 ND ND - - 1,2,3,7,8,9-HxCDF ND <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>								
1,2,3,4,7,8-HxCDD ND 0.18 ND ND - <td>2,3,7,8-TCDD</td> <td>ND</td> <td>0.09</td> <td>ND</td> <td>2.54</td> <td>102%</td> <td>50-150</td>	2,3,7,8-TCDD	ND	0.09	ND	2.54	102%	50-150	
1,2,3,6,7,8-HxCDD 1.02 0.19 ND 6.95 111% 50-150 1,2,3,7,8,9-HxCDD ND 0.18 ND ND - - - 1,2,3,4,6,7,8-HpCDD 13.45 0.23 ND 6.54 105% 50-150 0CDD 163.07 0.30 ND 11.29 90% 50-150 2,3,7,8-TCDF ND 0.05 ND 2.80 112% 50-150 2,3,7,8-PeCDF ND 0.08 ND 6.84 109% 50-150 2,3,4,7,8-PeCDF ND 0.09 ND ND - - 1,2,3,4,7,8-HxCDF ND 0.25 ND ND - - 1,2,3,6,7,8-HxCDF ND 0.29 ND ND - - 1,2,3,7,8,9-HxCDF ND 0.32 ND ND - - 1,2,3,4,6,7,8-HpCDF ND 0.49 ND 6.39 102% 50-150 1,2,3,4,7,8,9-HpCDF ND 0.58 ND ND - -	1,2,3,7,8-PeCDD	ND	0.24	ND	6.59	106%	50-150	
1,2,3,7,8,9-HxCDD ND 0.18 ND ND -	1,2,3,4,7,8-HxCDD	ND	0.18	ND	ND	-	-	
1,2,3,4,6,7,8-HpCDD 13.45 0.23 ND 6.54 105% 50-150 0CDD 163.07 0.30 ND 11.29 90% 50-150 2,3,7,8-TCDF ND 0.05 ND 2.80 112% 50-150 1,2,3,7,8-PeCDF ND 0.08 ND 6.84 109% 50-150 2,3,4,7,8-PeCDF ND 0.09 ND ND - - 1,2,3,4,7,8-HxCDF ND 0.25 ND ND - - 1,2,3,6,7,8-HxCDF ND 0.29 ND ND - - 1,2,3,7,8,9-HxCDF ND 0.32 ND ND - - 1,2,3,4,6,7,8-HpCDF 3.09 0.49 ND 6.39 102% 50-150 1,2,3,4,7,8,9-HpCDF ND 0.58 ND ND - -	1,2,3,6,7,8-HxCDD	1.02	0.19	ND	6.95	111%	50-150	
OCDD 163.07 0.30 ND 11.29 90% 50-150 2,3,7,8-TCDF ND 0.05 ND 2.80 112% 50-150 1,2,3,7,8-PeCDF ND 0.08 ND 6.84 109% 50-150 2,3,4,7,8-PeCDF ND 0.09 ND ND - - 1,2,3,4,7,8-HxCDF ND 0.25 ND ND - - 1,2,3,6,7,8-HxCDF ND 0.29 ND ND - - 1,2,3,7,8,9-HxCDF ND 0.32 ND ND - - 1,2,3,4,6,7,8-HpCDF 3.09 0.49 ND 6.39 102% 50-150 1,2,3,4,7,8,9-HpCDF ND 0.58 ND ND - -	1,2,3,7,8,9-HxCDD	ND	0.18	ND	ND	-	-	
2,3,7,8-TCDF ND 0.05 ND 2.80 112% 50-150 1,2,3,7,8-PeCDF ND 0.08 ND 6.84 109% 50-150 2,3,4,7,8-PeCDF ND 0.09 ND ND 1,2,3,4,7,8-HxCDF ND 0.25 ND ND 1,2,3,6,7,8-HxCDF ND 0.25 ND ND 1,2,3,4,6,7,8-HxCDF ND 0.29 ND ND 1,2,3,7,8,9-HxCDF ND 0.32 ND ND 1,2,3,7,8,9-HxCDF ND 0.32 ND ND 1,2,3,4,6,7,8-HpCDF ND 0.58 ND ND 1,2,3,4,6,7,8-HpCDF ND 0.58 ND ND	1,2,3,4,6,7,8-HpCDD	13.45	0.23	ND	6.54	105%	50-150	
1,2,3,7,8-PeCDF ND 0.08 ND 6.84 109% 50-150 2,3,4,7,8-PeCDF ND 0.09 ND ND - - - 1,2,3,4,7,8-HxCDF ND 0.25 ND ND - - - 1,2,3,6,7,8-HxCDF ND 0.29 ND ND - - - 1,2,3,7,8,9-HxCDF ND 0.32 ND ND - - - 1,2,3,4,6,7,8-HpCDF 3.09 0.49 ND 6.39 102% 50-150 1,2,3,4,7,8,9-HpCDF ND 0.58 ND ND - -	OCDD	163.07	0.30	ND	11.29	90%	50-150	
1,2,3,7,8-PeCDF ND 0.08 ND 6.84 109% 50-150 2,3,4,7,8-PeCDF ND 0.09 ND ND - - - 1,2,3,4,7,8-HxCDF ND 0.25 ND ND - - - 1,2,3,6,7,8-HxCDF ND 0.29 ND ND - - - 2,3,4,6,7,8-HxCDF ND 0.32 ND ND - - - 1,2,3,7,8,9-HxCDF ND 0.32 ND ND - - - 1,2,3,4,6,7,8-HpCDF 3.09 0.49 ND 6.39 102% 50-150 1,2,3,4,7,8,9-HpCDF ND 0.58 ND ND - -								
2,3,4,7,8-PeCDF ND 0.09 ND ND - - - 1,2,3,4,7,8-HxCDF ND 0.25 ND ND - - - 1,2,3,6,7,8-HxCDF ND 0.29 ND ND - - - 2,3,4,6,7,8-HxCDF ND 0.32 ND ND - - - 1,2,3,7,8,9-HxCDF ND 0.49 ND 6.39 102% 50-150 1,2,3,4,6,7,8-HpCDF ND 0.58 ND ND - -	2,3,7,8-TCDF	ND	0.05	ND	2.80	112%	50-150	
1,2,3,4,7,8-HxCDF ND 0.25 ND ND - - 1,2,3,6,7,8-HxCDF ND 0.25 ND 6.56 105% 50-150 2,3,4,6,7,8-HxCDF ND 0.29 ND ND - - 1,2,3,7,8,9-HxCDF ND 0.32 ND ND - - 1,2,3,4,6,7,8-HpCDF 3.09 0.49 ND 6.39 102% 50-150 1,2,3,4,7,8,9-HpCDF ND 0.58 ND ND - -	1,2,3,7,8-PeCDF	ND	0.08	ND	6.84	109%	50-150	
1,2,3,6,7,8-HxCDF ND 0.25 ND 6.56 105% 50-150 2,3,4,6,7,8-HxCDF ND 0.29 ND ND - - 1,2,3,7,8,9-HxCDF ND 0.32 ND ND - - 1,2,3,4,6,7,8-HpCDF 3.09 0.49 ND 6.39 102% 50-150 1,2,3,4,7,8,9-HpCDF ND 0.58 ND ND - -	2,3,4,7,8-PeCDF	ND	0.09	ND	ND	-	-	
2,3,4,6,7,8-HxCDF ND 0.29 ND ND -	1,2,3,4,7,8-HxCDF	ND	0.25	ND	ND	-	•	
2,3,4,6,7,8-HxCDF ND 0.29 ND ND - - 1,2,3,7,8,9-HxCDF ND 0.32 ND ND - - 1,2,3,4,6,7,8-HpCDF 3.09 0.49 ND 6.39 102% 50-150 1,2,3,4,7,8,9-HpCDF ND 0.58 ND ND - -	1,2,3,6,7,8-HxCDF	ND	0.25	ND	6.56	105%	50-150	
1,2,3,7,8,9-HxCDF ND 0.32 ND ND - - 1,2,3,4,6,7,8-HpCDF 3.09 0.49 ND 6.39 102% 50-150 1,2,3,4,7,8,9-HpCDF ND 0.58 ND ND - -	2,3,4,6,7,8-HxCDF	ND	0.29	ND	ND	•	-	
1,2,3,4,6,7,8-HpCDF 3.09 0.49 ND 6.39 102% 50-150 1,2,3,4,7,8,9-HpCDF ND 0.58 ND ND		ND	0.32	ND	ND	•	-	
1,2,3,4,7,8,9-HpCDF ND 0.58 ND ND		3.09	0.49	ND	6.39	102%	50-150	
	•	ND	0.58	ND	ND	-	-	
	OCDF	19.13	0.27	ND	11.21	90%	50-150	

ND ND	0	TOTAL TCDD
ND		I O I AL I ODD
	0	TOTAL PeCDD
1.83	2	TOTAL HXCDD
25.12	2	TOTAL HPCDD
ND	0	TOTAL TCDF
ND	0	TOTAL PeCDF
1.92	2	TOTAL HXCDF
15.42	2	TOTAL HPCDF
ND ND 1.92	 	0 0 2

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-11 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-288 Ionics Sample: 3-88-4

Phone: (713) 972-1037

Fax: (713) 784-1152

Specific analytes	Sample		Blank		Lab spike	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.03	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.16	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	0.14	0.07	ND	ND	-	-
1,2,3,6,7,8-HxCDD	0.19	0.07	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	0.20	0.07	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	8.26	0.07	ND	6.54	105%	50-150
OCDD	100.30	0.11	ND	11.29	90%	50-150
2,3,7,8-TCDF	0.04	0.04	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.08	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.09	ND	ND	-	-
1,2,3,4,7,8-HxCDF	0.15	0.04	ND	ND	-	-
1,2,3,6,7,8-HxCDF	0.09	0.04	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	ND	0.05	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.05	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	2.04	0.18	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.21	ND	ND	-	•
OCDF	13.85	0.09	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	, , , , , , , , , , , , , , , , , , ,
TOTAL TODD	2	0.18	0.03	Total dioxins/furans
TOTAL PeCDD TOTAL HxCDD	0 5	ND 1.56	0.16 0.07	145.53 ppb
TOTAL HPCDD	2	17.04	0.07	
TOTAL TCDF	1	0.04	0.04	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	1 4	0.14 1.79	0.09 0.05	0.298 ppb
TOTAL HpCDF	2	10.63	0.21	olaco pp.

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

15.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-13

SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-288 Ionics Sample: 3-88-9

Phone: (713) 972-1037

Specific analytes	Sam	ple	Blank		Lab spike	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.01	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.03	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.39	ND	ND	-	-
1,2,3,6,7,8-HxCDD	28.46	0.41	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	11.01	0.40	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	874.83	0.34	ND	6.54	105%	50-150
OCDD	10100.93	1.50	ND	11.29	90%	50-150
2,3,7,8-TCDF	14.76	0.93	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.12	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	7.90	0.13	ND	ND	-	-
1,2,3,4,7,8-HxCDF	35.87	0.64	ND	ND	-	-
1,2,3,6,7,8-HxCDF	8.44	0.62	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	10.23	0.72	ND	ND	-	-
1,2,3,7,8,9-HxCDF	4.54	0.80	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	610.83	1.48	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	ND	1.76	ND	ND	_	-
OCDF	3885.98	1.25	ND	11.21	90%	50-150
	1		1	!		

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TODD	1	0.29	0.01	Total dioxins/furans
TOTAL PeCDD	0	ND	0.03	
TOTAL HXCDD	4	131.39	0.41	19362.89 ppb
TOTAL HPCDD	2	1677.27	0.34	
TOTAL TCDF	3	31.27	0.93	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	7	97.87	0.13	• •
TOTAL HXCDF	10	772.81	0.80	44.126 ppb
TOTAL HpCDF	2	2665.08	1.76	:
		-		

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-15 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-288 Ionics Sample: 3-88-8

Phone: (713) 972-1037

Specific analytes	Sample		Blank		Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits	
						20.000	
2,3,7,8-TCDD	ND	0.16	ND	2.54	102%	50-150	
1,2,3,7,8-PeCDD	ND	0.66	ND	6.59	106%	50-150	
1,2,3,4,7,8-HxCDD	ND	0.81	ND	ND	-	-	
1,2,3,6,7,8-HxCDD	ND	0.84	ND	6.95	111%	50-150	
1,2,3,7,8,9-HxCDD	ND	0.82	ND	ND	-	-	
1,2,3,4,6,7,8-HpCDD	13.04	0.53	ND	6.54	105%	50-150	
OCDD	179.19	0.67	ND	11.29	90%	50-150	
2,3,7,8-TCDF	2.27	1.93	ND	2.80	112%	50-150	
1,2,3,7,8-PeCDF	ND	0.20	ND	6.84	109%	50-150	
2,3,4,7,8-PeCDF	ND	0.22	ND	ND	-	•	
1,2,3,4,7,8-HxCDF	ND	0.56	ND	ND	-	-	
1,2,3,6,7,8-HxCDE	ND	0.54	ND	6.56	105%	50-150	
2,3,4,6,7,8-HxCDF	ND	0.63	ND	ND	-	-	
1,2,3,7,8,9-HxCDF	ND	0.70	ND	ND	-	-	
1,2,3,4,6,7,8-HpCDF	6.10	1.24	ND	6.39	102%	50-150	
1,2,3,4,7,8,9-HpCDF	ND	1.48	ND	ND	-	-	
OCDF	29.65	0.38	ND	11.21	90%	50-150	

Total analytes*	Number	Conc (ppb)	DL (ppb)	
		- .		
TOTAL TODD	1	1.81	0.16	Total dioxins/furans
TOTAL PeCDD	1	2.21	0.66	
TOTAL HXCDD	1	2.15	0.84	282.07 ppb
TOTAL HPCDD	2	27.58	0.53	
TOTAL TCDF	9	8.52	1.93	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	0	1.76	0.22	
TOTAL HXCDF	2	4.84	0.70	0.627 ppb
TOTAL HPCDF	2	24.35	1.48	• •

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-17

SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-288 Ionics Sample: 3-88-10

Phone: (713) 972-1037

Specific analytes	Sam	ple	Blank	Lab spike			
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits	
							
2,3,7,8-TCDD	ND	0.05	ND	2.54	102%	50-150	
1,2,3,7,8-PeCDD	ND	0.12	ND	6.59	106%	50-150	
1,2,3,4,7,8-HxCDD	ND	0.12	ND	ND	-	-	
1,2,3,6,7,8-HxCDD	0.89	0.13	ND	6.95	111%	50-150	
1,2,3,7,8,9-HxCDD	ND	0.12	ND	ND	-	-	
1,2,3,4,6,7,8-HpCDD	29.43	0.16	ND	6.54	105%	50-150	
OCDD	401.35	0.52	ND	11.29	90%	50-150	
2,3,7,8-TCDF	0.49	0.21	ND ND	2.80	112%	50-150	
1,2,3,7,8-PeCDF	ND	0.05	ND	6.84	109%	50-150	
2,3,4,7,8-PeCDF	ND	0.05	ND	ND	-	-	
1,2,3,4,7,8-HxCDF	1.98	0.18	ND	ND	-	-	
1,2,3,6,7,8-HxCDF	1.29	0.17	ND	6.56	105%	50-150	
2,3,4,6,7,8-HxCDF	ND	0.20	ND	ND	-	-	
1,2,3,7,8,9-HxCDF	ND	0.22	ND	ND	-	-	
1,2,3,4,6,7,8-HpCDF	14.96	0.49	ND	6.39	102%	50-150	
1,2,3,4,7,8,9-HpCDF	1.18	0.58	ND	ND	-	•	
OCDF	85.10	0.77	ND	11.21	90%	50-150	

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TODD	1	1.85	0.05	Total dioxins/furans
TOTAL PeCDD	0	ND	0.12	
TOTAL HXCDD	3	4.87	0.13	556.94 ppb
TOTAL HPCDD	2	30.02	0.16	
TOTAL TCDF	1	0.49	0.21	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	1	1.09	0.05	• •
TOTAL HXCDF	4	13.32	0.22	1.407 ppb
TOTAL HPCDF	3	18.85	0.58	••

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS lonics Project: 95-288
Client Sample: CSH-19 SUMMARY REPORT lonics Sample: 3-88-3

Specific analytes	Sam	ple	Blank	Lab spike			
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits	
				_			
2,3,7,8-TCDD	ND	0.05	ND	2.54	102%	50-150	
1,2,3,7,8-PeCDD	ND	0.08	ND	6.59	106%	50-150	
1,2,3,4,7,8-HxCDD	ND	0.15	ND	ND	-	-	
1,2,3,6,7,8-HxCDD	ND	0.16	ND	6.95	111%	50-150	
1,2,3,7,8,9-HxCDD	ND	0.15	ND	ND	-	-	
1,2,3,4,6,7,8-HpCDD	10.60	0.20	ND	6.54	105%	50-150	
OCDD	152.69	0.23	ND	11.29	90%	50-150	
2,3,7,8-TCDF	0.44	0.05	ND	2.80	112%	50-150	
1,2,3,7,8-PeCDF	ND	0.04	ND	6.84	109%	50-150	
2,3,4,7,8-PeCDF	ND	0.04	ND	ND	-	-	
1,2,3,4,7,8-HxCDF	1.44	0.21	ND	ND	-	•	
1,2,3,6,7,8-HxCDF	0.31	0.20	ND	6.56	105%	50-150	
2,3,4,6,7,8-HxCDF	ND	0.23	ND	ND	-	-	
1,2,3,7,8,9-HxCDF	ND	0.26	ND	ND	-	-	
1,2,3,4,6,7,8-HpCDF	6.33	0.26	ND	6.39	102%	50-150	
1,2,3,4,7,8,9-HpCDF	ND	0.31	ND	ND	-	-	
OCDF	16.70	0.18	ND	11.21	90%	50-150	

	DL (ppb)	Conc (ppb)	Number	Total analytes*
Total dioxins/furans	0.05	ND	0	TOTAL TCDD
	0.08	ND	0	TOTAL PeCDD
214.39 ppb	0.16	0.87	1	TOTAL HXCDD
	0.20	19.91	2	TOTAL HPCDD
2,3,7,8-TCDD toxicity equivalent	0.05	0.44	1	TOTAL TCDF
•	0.04	1.25	2	TOTAL PeCDF
0.558 ppb	0.26	6.20	4	TOTAL HXCDF
• •	0.31	16.33	2	TOTAL HPCDF

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-21

SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-288 Ionics Sample: 3-88-6

Specific analytes	Sam	ple	Blank		Lab spike	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.18	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.45	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	2.34	0.19	ND	ND	-	-
1,2,3,6,7,8-HxCDD	2.93	0.20	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	1.16	0.20	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	103.49	0.23	ND	6.54	105%	50-150
OCDD	1431.00	0.39	ND	11.29	90%	50-150
2,3,7,8-TCDF	1.74	0.08	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.20	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.21	ND	ND	-	-
1,2,3,4,7,8-HxCDF	2.93	0.31	ND	ND	-	-
1,2,3,6,7,8-HxCDF	1.38	0.30	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	0.36	0.35	ND	ND	-	•
1,2,3,7,8,9-HxCDF	ND	0.39	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	39.60	0.33	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	3.42	0.39	ND	ND	-	•
OCDF	172.30	0.40	ND	11.21	90%	50-150

Total analytes*	Number	Conc (ppb)	DL (ppb)	, , , , , , , , , , , , , , , , , , ,
TOTAL TODD	5	11.87	0.18	Total dioxins/furans
TOTAL PeCDD	3	4.16	0.45	
TOTAL HXCDD	7	22.67	0.20	2037.29 ppb
TOTAL HPCDD	2	192.32	0.23	
TOTAL TCDF	10	10.74	0.08	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	3	1.86	0.21	• •
TOTAL HXCDF	7	37.03	0.39	4.352 ppb
TOTAL HPCDF	3	153.34	0.39	•••
		_		

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

IONICS INTERNATIONAL, INC. (800) 4-DIOXIN

A.

10655 Richmond Ave., Ste. 150 Houston, TX 77042

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-23 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-288 Ionics Sample: 3-88-1

Phone: (713) 972-1037

Specific analytes	Sam	ple	Blank		Lab spike	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
0.07.0.TODD	ND	0.01	ND	254	102%	E0 4E0
2,3,7,8-TCDD	ND	0.01	ND	2.54		50-150
1,2,3,7,8-PeCDD	0.89	0.05	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.08	ND	ND	-	•
1,2,3,6,7,8-HxCDD	11.21	80.0	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	2.12	0.08	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	431.74	0.04	ND	6.54	105%	50-150
OCDD	4918.36	0.54	ND	11.29	90%	50-150
2,3,7,8-TCDF	0.25	0.04	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.02	l ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.02	ND	ND	-	-
1,2,3,4,7,8-HxCDF	4.84	0.05	ND	ND	-	-
1,2,3,6,7,8-HxCDF	2.92	0.05	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	1.13	0.06	ND	ND	-	-
1,2,3,7,8,9-HxCDF	0.39	0.07	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	123.21	0.16	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	8.66	0.18	ND	ND	-	-
OCDF	874.15	0.34	ND	11.21	90%	50-150

	DL (ppb)	Conc (ppb)	Number	Total analytes*
Total dioxins/furans	0.01	0.30	1	TOTAL TCDD
	0.05	2.03	4	TOTAL PeCDD
7463.83 ppb	0.08	66.27	9	TOTAL HXCDD
-	0.04	825.65	2	TOTAL HPCDD
2,3,7,8-TCDD toxicity equivalent	0.04	1.17	9	TOTAL TCDF
•	0.02	2.54	2	TOTAL PeCDF
14.159 ppb	0.07	107.65	9	TOTAL HXCDF
• •	0.18	665.73	4	TOTAL HpCDF

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: OS-1 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-288 Ionics Sample: 3-88-13

Phone: (713) 972-1037

Specific analytes	Sample		Blank	Lab spike			
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits	
2,3,7,8-TCDD	0.61	0.08	ND '	2.54	102%	50-150	
1,2,3,7,8-PeCDD	6.79	0.21	ND	6.59	106%	50-150	
1,2,3,4,7,8-HxCDD	27.37	0.56	ND I	ND	-	-	
1,2,3,6,7,8-HxCDD	43.10	0.59	ND	6.95	111%	50-150	
1,2,3,7,8,9-HxCDD	31.11	0.57	ND .	ND	-	-	
1,2,3,4,6,7,8-HpCDD	1356.23	0.21	ND	6.54	105%	50-150	
OCDD	11299.96	1.55	ND	11.29	90%	50-150	
2,3,7,8-TCDF	0.47	0.24	ND	2.80	112%	50-150	
1,2,3,7,8-PeCDF	ND	0.13	ND	6.84	109%	50-150	
2,3,4,7,8-PeCDF	ND	0.14	ND	ND	-	-	
1,2,3,4,7,8-HxCDF	8.27	0.75	ND	ND	-	-	
1,2,3,6,7,8-HxCDE	9.54	0.73	ND	6.56	105%	50-150	
2,3,4,6,7,8-HxCDF	3.88	0.85	ND	ND	-	-	
1,2,3,7,8,9-HxCDF	1.27	0.94	ND	ND	•	-	
1,2,3,4,6,7,8-HpCDF	404.98	1.13	ND	6.39	102%	50-150	
1,2,3,4,7,8,9-HpCDF	26.75	1.34	ND	ND	-	-	
OCDF	2040.46	0.86	ND	11.21	90%	50-150	

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TODA	_	0.45		
TOTAL TCDD	5	2.45	0.08	Total dioxins/furans
TOTAL PeCDD	3	16.51	0.21	
TOTAL HXCDD	9	257.09	0.59	18455.99 ppb
TOTAL HpCDD	2	2582.31	0.21	
TOTAL TCDF	7	5.31	0.24	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	5	36.41	0.14	•
TOTAL HXCDF	9	352.85	0.94	47.723 ppb
TOTAL HPCDF	4	1862.64	1.34	• •

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: OS-2 SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-288 Ionics Sample: 3-88-14

Phone: (713) 972-1037

Specific analytes	Sam	pie	Blank		Lab spike	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.29	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.33	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.45	ND	ND	-	-
1,2,3,6,7,8-HxCDD	ND	0.47	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	ND	0.46	ND	ND	•	-
1,2,3,4,6,7,8-HpCDD	7.72	0.49	ND	6.54	105%	50-150
OCDD	78.80	0.49	ND	11.29	90%	50-150
2,3,7,8-TCDF	ND	0.17	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.12	ND	6.84	109%	50-150
2,3,4,7,8-PeCDF	ND	0.12	ND	ND	-	-
1,2,3,4,7,8-HxCDF	ND	0.22	ND	ND	-	-
1,2,3,6,7,8-HxCDF	ND	0.22	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	ND	0.25	ND	ND	-	-
1,2,3,7,8,9-HxCDF	ND	0.28	ND	ND	-	-
1,2,3,4,6,7,8-HpCDF	1.80	0.48	ND	6.39	102%	50-150
1,2,3,4,7,8,9-HpCDF	ND	0.57	ND	ND	-	-
OCDF	7.04	0.48	ND	11.21	90%	50-150
			1			

Total analytes*	Number	Conc (ppb)	DL (ppb)	
TOTAL TODD	0	ND	0.29	Total dioxins/furans
TOTAL PeCDD	0	ND	0.33	
TOTAL HXCDD	0	ND	0.47	109.43 ppb
TOTAL HPCDD	2	15.17	0.49	
TOTAL TCDF	0	ND	0.17	2,3,7,8-TCDD toxicity equivalent
TOTAL PeCDF	0	ND	0.12	•
TOTAL HXCDF	2	1.69	0.28	0.181 ppb
TOTAL HpCDF	2	6.72	0.57	• •

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: OS-DA SAMPLE ANALYSIS SUMMARY REPORT Ionics Project: 95-288 Ionics Sample: 3-88-12

Phone: (713) 972-1037

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.11	ND	2.54	102%	50-150
1,2,3,7,8-PeCDD	ND	0.24	ND	6.59	106%	50-150
1,2,3,4,7,8-HxCDD	ND	0.29	ND	ND	-	-
1,2,3,6,7,8-HxCDD	ND	0.30	ND	6.95	111%	50-150
1,2,3,7,8,9-HxCDD	ND	0.30	ND	ND	-	-
1,2,3,4,6,7,8-HpCDD	22.44	0.66	ND	6.54	105%	50-150
OCDD	219.93	0.51	ND	11.29	90%	50-150
2,3,7,8-TCDF	ND	0.10	ND	2.80	112%	50-150
1,2,3,7,8-PeCDF	ND	0.18	ND	6.84	109%	50-150 50-150
2,3,4,7,8-PeCDF	ND ND	0.10	ND	ND	10978	30-130
1,2,3,4,7,8-HxCDF	ND	0.20	ND	ND	-	-
1,2,3,6,7,8-HxCDF	ND	0.22	ND	6.56	105%	50-150
2,3,4,6,7,8-HxCDF	ND	0.25	ND	ND	105 /6	50-150
1,2,3,7,8,9-HxCDF	ND	0.28	ND	ND	_	_
1,2,3,4,6,7,8-HpCDF	5.16	0.56	ND	6.39	102%	50-150
· ·				1	102/6	50-150
•			i	1	000/	EO 150
1,2,3,4,7,8,9-HpCDF OCDF	ND 24.72	0.67 0.18	ND ND	ND 11.21	90%	- 50-1

Total analytes*	Number	Conc (ppb)	DL (ppb)	,
TOTAL TCDD TOTAL PeCDD TOTAL HxCDD TOTAL HpCDD	0 0 1 2	ND ND 1.07 41.22	0.11 0.24 0.30 0.66	Total dioxins/furans 311.22 ppb
TOTAL TCDF TOTAL PeCDF	0	ND ND	0.10 0.20	2,3,7,8-TCDD toxicity equivalent
TOTAL HXCDF TOTAL HPCDF	1 2	1.61 22.67	0.28 0.67	0.521 ppb

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS REPORT

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-1 SAMPLE ANALYSIS REPORT Ionics Project: 95-288 Ionics Sample: 3-91-11

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received:

4/18/95 4/24/95 Sample size: Matrix:

Origin:

10.6 g Soil File: Ret check: F11606 F11601

Date extracted:
Date analyzed:

5/1/95 5/15/95 Site G

Daily cal: Initial cal: F11602 F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.05			U
1,2,3,7,8-PeCDD	ND	0.29	-		U
1,2,3,4,7,8-HxCDD	ND	0.35	•		U
1,2,3,6,7,8-HxCDD	ND	0.37	-		U
1,2,3,7,8,9-HxCDD	ND	0.36	-		U
1,2,3,4,6,7,8-HpCDD	5.33	0.28	0.92	35:53	
OCDD	48.31	0.43	0.86	40:22	
2,3,7,8-TCDF	ND	0.09	_		U
1,2,3,7,8-PeCDF	ND	0.10	-		U
2,3,4,7,8-PeCDF	ND	0.10	-		U
1,2,3,4,7,8-HxCDF	ND	0.20	-		U
1,2,3,6,7,8-HxCDF	ND	0.20	-		U
2,3,4,6,7,8-HxCDF	ND	0.23	-		U
1,2,3,7,8,9-HxCDF	ND	0.25	-		U
1,2,3,4,6,7,8-HpCDF	ND	0.40	-		U
1,2,3,4,7,8,9-HpCDF	ND	0.47	-		U
OCDF	9.09	0.15	0.99	40:35	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.05	U
TOTAL PeCDD	Ö	ND	0.29	Ü
TOTAL HXCDD	0	ND	0.37	U
TOTAL HPCDD	2	10.23	0.28	
TOTAL TODE	0	ND	0.09	U
TOTAL PeCDF	0	ND	0.10	U
TOTAL HXCDF	2	14.12	0.25	*
TOTAL HPCDF	1	7.18	0.47	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS lonics Project: 95-288 Client Sample: CSH-1 QC REPORT lonics Sample: 3-91-11

Date collected: 4/18/95 Sample size: 10.6 g File: F11606 4/24/95 Soil Date received: Matrix: Ret check: F11601 Date extracted: 5/1/95 Origin: Site G Daily cal: F11602 Date analyzed: 5/15/95 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.15	66.8	0.83	21:11	-
13C12-2,3,7,8-TCDD	3.62	76.8	0.76	21:47	-
13C12-1,2,3,6,7,8-HxCDD	3.29	69.7	1.17	31:08	-
13C12-1,2,3,4,6,7,8-HpCDF	5.54	58.7	1.12	34:23	-
13C12-OCDD	4.65	49.2	0.91	40:21	

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.72	72.9	21:48	-

very standards Ratio RT (min)	Flags
12-1,2,3,4-TCDD 0.87 21:33	•
12-1,2,3,7,8,9-HxCDD 1.31 31:38	-
12-1,2,3,7,8,9-HxCDD 1.31 31:38	

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-3 SAMPLE ANALYSIS REPORT Ionics Project: 95-288
Ionics Sample: 3-88-5

Date collected: Date received: 4/19/95 4/20/95 Sample size: Matrix: 10.42 g Soil File: Ret check: F11587 F11584 F11585

Date extracted:
Date analyzed:

4/25/95 5/11/95 Origin:

Site G Daily o

Daily cal: F11585 Initial cal: F052394C

Phone: (713) 972-1037

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.04	_		U
1,2,3,7,8-PeCDD	ND	0.21	-		Ū
1,2,3,4,7,8-HxCDD	ND	0.30	-		U
1,2,3,6,7,8-HxCDD	ND	0.31	-		U
1,2,3,7,8,9-HxCDD	ND	0.31	-		U
1,2,3,4,6,7,8-HpCDD	2.29	0.19	1.07	35:50	J
OCDD	28.69	0.32	0.90	40:19	
2,3,7,8-TCDF	ND	0.07	-		υ
1,2,3,7,8-PeCDF	ND	0.07	-		U
2,3,4,7,8-PeCDF	ND	0.07	-		U
1,2,3,4,7,8-HxCDF	ND	0.13	-		U
1,2,3,6,7,8-HxCDF	ND	0.13	-		U
2,3,4,6,7,8-HxCDF	ND	0.15	-		U
1,2,3,7,8,9-HxCDF	ND	0.16	-		U
1,2,3,4,6,7,8-HpCDF	ND	0.51	-		U
1,2,3,4,7,8,9-HpCDF	ND	0.61	-		U
OCDF	2.74	0.17	0.99	40:29	J

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.13	0.04	J
TOTAL PeCDD	0	ND	0,21	Ü
TOTAL HXCDD	0	ND	0.31	U
TOTAL HPCDD	2	4.80	0.19	
TOTAL TCDF	0	ND	0.07	U
TOTAL PeCDF	0	ИD	0.07	U
TOTAL HXCDF	0	ND ,	0.16	U
TOTAL HPCDF	1	1.06	0.61	J

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-3 SAMPLE ANALYSIS

QC REPORT

Ionics Project: 95-288
Ionics Sample: 3-88-5

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received: 4/19/95 4/20/95 4/25/95

Sample size: Matrix:

Origin:

10.42 g Soil File: Ret check: F11587 F11584

Date extracted:
Date analyzed:

4/25/95 5/11/95 Site G

Daily cal: Initial cal: F11585 F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	2.88	60.0	0.86	21:07	-
13C12-2,3,7,8-TCDD	3.28	68.3	0.75	21:45	-
13C12-1,2,3,6,7,8-HxCDD	2.68	55.8	1.37	31:05	-
13C12-1,2,3,4,6,7,8-HpCDF	4.46	46.5	1.15	34:21	-
13C12-OCDD	3.31	34.5	1.11	40:17	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.93	80.6	21:46	-

0.82	21:32	-
1.31	31:36	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-5 SAMPLE ANALYSIS REPORT Ionics Project: 95-288 Ionics Sample: 3-88-7

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received:

4/19/95 4/20/95

Sample size: Matrix:

Origin:

10.02 g Soil File: Ret check: F11607 F11601

Date extracted:
Date analyzed:

4/25/95 5/15/95 Soil Site G

Daily cal: Initial cal: F11602 F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.06	•		U
1,2,3,7,8-PeCDD	ND	0.31	-		U
1,2,3,4,7,8-HxCDD	ND	0.21	•		U
1,2,3,6,7,8-HxCDD	ND	0.22	•		U
1,2,3,7,8,9-HxCDD	ND	0.22	-		U
1,2,3,4,6,7,8-HpCDD	3.94	0.27	0.97	35:51	
OCDD	52.79	0.56	0.86	40:21	
2,3,7,8-TCDF	ND	0.06	•		U
1,2,3,7,8-PeCDF	ND	0.09	-		U
2,3,4,7,8-PeCDF	ND	0.10	-		U
1,2,3,4,7,8-HxCDF	ND	0.20	-		U
1,2,3,6,7,8-HxCDF	ND	0.19	-		U
2,3,4,6,7,8-HxCDF	ND	0.22	-		U
1,2,3,7,8,9-HxCDF	ND	0.25	-		U
1,2,3,4,6,7,8-HpCDF	1.52	0.30	1.01	34:24	J
1,2,3,4,7,8,9-HpCDF	ND	0.36	-		Ų
OCDF	5.69	0.15	0.86	40:32	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TODD	0	ND	0.06	U
TOTAL PeCDD	0	ND	0.31	U
TOTAL HXCDD	0	ND	0.22	U
TOTAL HPCDD	2	7.75	0.27	
TOTAL TCDF	0	ND	0.06	U
TOTAL PeCDF	0	ND	0.10	U
TOTAL HXCDF	0	ND ,	0.25	U
TOTAL HPCDF	2	4.89	0.36	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-5 SAMPLE ANALYSIS
QC REPORT

Ionics Project: 95-288
Ionics Sample: 3-88-7

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received:

4/19/95 4/20/95 Sample size: Matrix:

Origin:

10.02 g Soil File: Ret check: F11607 F11601

Date received:
Date extracted:
Date analyzed:

4/25/95 5/15/95 Site G

Daily cal: Initial cal: F11602 F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	2.86	57.4	0.76	21:11	-
13C12-2,3,7,8-TCDD	2.91	58.4	0.82	21:33	-
13C12-1,2,3,6,7,8-HxCDD	2.67	53.6	1.20	31:07	-
13C12-1,2,3,4,6,7,8-HpCDF	4.12	41.3	1.11	34:22	-
13C12-OCDD	2.95	29.5	0.98	40:20	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37CI4-2,3,7,8-TCDD	2.36	94.6	21:48	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.82	21:33	
13C12-1,2,3,7,8,9-HxCDD	1.24	31:37	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 **Client Sample: CSH-7** SAMPLE ANALYSIS REPORT

Ionics Project: 95-288 Ionics Sample: 3-88-2

Date collected:

4/19/95

Sample size:

10.02 g File:

F11582 Ret check:

Phone: (713) 972-1037

Fax: (713) 784-1152

Date received: Date extracted: 4/20/95 4/25/95

Matrix: Soil Origin: Site G

Daily cal: Initial cal:

F11576 F11577 F052394C

Date analyzed: 5/10/95

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
	NO	0.44			1.1
2,3,7,8-TCDD	ND	0.11	-		U
1,2,3,7,8-PeCDD	ND	0.15	-		U
1,2,3,4,7,8-HxCDD	ND	0.26	-		U
1,2,3,6,7,8-HxCDD	ND	0.27	-		U
1,2,3,7,8,9-HxCDD	ND	0.26	-		U
1,2,3,4,6,7,8-HpCDD	9.99	0.12	1.16	35:52	
OCDD	133.93	0.27	0.92	40:24	E
2,3,7,8-TCDF	ND	0.02	-		U
1,2,3,7,8-PeCDF ~	ND	0.06	-		U
2,3,4,7,8-PeCDF	ND	0.07	-		U
1,2,3,4,7,8-HxCDF	ND	0.19	-		U
1,2,3,6,7,8-HxCDF	ND	0.18	-		U
2,3,4,6,7,8-HxCDF	ND	0.22	-		U
1,2,3,7,8,9-HxCDF	ND	0.24	-		υ
1,2,3,4,6,7,8-HpCDF	2.82	0.70	1.13	34:25	
1,2,3,4,7,8,9-HpCDF	ND	0.83	-	00:00	U
OCDF	11.65	0.20	0.92	40:34	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.11	U
TOTAL PeCDD	0	ND	0.15	U
TOTAL HXCDD	2	1.17	0.27	J
TOTAL HPCDD	2	18.28	0.12	
TOTAL TCDF	0	ND	0.02	U
TOTAL PeCDF	0	ND	0.07	U
TOTAL HXCDF	1	0.96	0.24	J
TOTAL HPCDF	2	11.55	0.83	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-7 SAMPLE ANALYSIS

QC REPORT

Ionics Project: 95-288 Ionics Sample: 3-88-2

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received: 4/19/95 4/20/95

Sample size: Matrix:

Origin:

10.02 g Soil File: Ret check: F11582 F11576

Date extracted:
Date analyzed:

4/25/95 5/10/95 Site G

Daily cal: Initial cal: F11577 F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	2.60	52.2	0.83	21:11	•
13C12-2,3,7,8-TCDD	2.78	55.7	0.81	21:48	-
13C12-1,2,3,6,7,8-HxCDD	2.63	52.8	1.29	31:08	-
13C12-1,2,3,4,6,7,8-HpCDF	3.80	38.0	1.14	34:23	Y
13C12-OCDD	3.54	35.5	1.00	40:23	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37CI4-2,3,7,8-TCDD	2.16	86.7	21:48	-

Recovery standards	Ratio	RT (min)	Flags	
13C12-1,2,3,4-TCDD	0.89	21:34	-	
13C12-1,2,3,7,8,9-HxCDD	1.31	31:38	-	

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-9 SAMPLE ANALYSIS REPORT Ionics Project: 95-288 Ionics Sample: 3-88-11

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received: 4/19/95 4/20/95 Sample size: Matrix:

Origin:

10.02 g Soil File: Ret check: F11600 F11591 F11593

Date extracted:
Date analyzed:

4/25/95 5/12/95 Site G

Daily cal: Initial cal: F11593 F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.09	_		U
1,2,3,7,8-PeCDD	ND	0.24	-		U
1,2,3,4,7,8-HxCDD	ND	0.18	-		U
1,2,3,6,7,8-HxCDD	1.02	0.19	1.14	30:21	J
1,2,3,7,8,9-HxCDD	ND	0.18	-		Ų
1,2,3,4,6,7,8-HpCDD	13.45	0.23	0.98	35:59	
OCDD	163.07	0.30	0.88	40:31	E
2,3,7,8-TCDF	ND	0.05	•		U
1,2,3,7,8-PeCDF ~	ND	80.0	-		U
2,3,4,7,8-PeCDF	ND	0.09	-		U
1,2,3,4,7,8-HxCDF	ND	0.25	-		U
1,2,3,6,7,8-HxCDF	ND	0.25	-		U
2,3,4,6,7,8-HxCDF	ND	0.29	-		U
1,2,3,7,8,9-HxCDF	ND	0.32	-		U
1,2,3,4,6,7,8-HpCDF	3.09	0.49	0.92	34:32	
1,2,3,4,7,8,9-HpCDF	ND	0.58	-		U
OCDF	19.13	0.27	0.93	40:42	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.09	U
TOTAL PeCDD	0	ND	0.24	U
TOTAL HXCDD	2	1.83	0.19	j
TOTAL HPCDD	2	25.12	0.23	
TOTAL TCDF	o	ND	0.05	U
TOTAL PeCDF	0	ND	0.09	U
TOTAL HXCDF	2	1.92	0.32	J
TOTAL HPCDF	2	15.42	0.58	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

SAMPLE ANALYSIS Ionics Project: 95-288 Client Project: 8168 QC REPORT Ionics Sample: 3-88-11 Client Sample: CSH-9 Date collected: 4/19/95 Sample size: 10.02 g File: F11600 4/20/95 Matrix: Soil Ret check: F11591 Date received: Origin: Site G Date extracted: 4/25/95 Daily cal: F11593 Date analyzed: 5/12/95 Initial cal: F052394C

Conc (ppb)	% Rec	Ratio	RT (min)	Flags
2.47	49.5	0.75	21:14	-
2.52	50.5	0.72	21:51	-
1.67	33.4	1.33	31:16	Υ
3.14	31.5	1.10	34:31	Υ
2.18	21.8	0.95	40:30	Υ
	2.47 2.52 1.67 3.14	2.47 49.5 2.52 50.5 1.67 33.4 3.14 31.5	2.47 49.5 0.75 2.52 50.5 0.72 1.67 33.4 1.33 3.14 31.5 1.10	2.47 49.5 0.75 21:14 2.52 50.5 0.72 21:51 1.67 33.4 1.33 31:16 3.14 31.5 1.10 34:31

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37CI4-2,3,7,8-TCDD	2.23	89.4	21:52	-

70	04.07	
J.7 9	21:37	-
1.26	31:45	-
).79 I.26	21.01

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occuring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

Phone: (713) 972-1037

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-11 SAMPLE ANALYSIS REPORT Ionics Project: 95-288 Ionics Sample: 3-88-4

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received: 4/19/95 4/20/95 Sample size: Matrix:

Origin:

10.15 g Soil File: Ret check: F11586 F11584 F11585

Date extracted:
Date analyzed:

4/25/95 5/11/95 Site G

Daily cal: Initial cal:

F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.03	-		U
1,2,3,7,8-PeCDD	ND	0.16	-		U
1,2,3,4,7,8-HxCDD	0.14	0.07	1.23	30:59	J
1,2,3,6,7,8-HxCDD	0.19	0.07	1.32	31:05	J
1,2,3,7,8,9-HxCDD	0.20	0.07	1.16	31:34	J
1,2,3,4,6,7,8-HpCDD	8.26	0.07	1.07	35:46	
OCDD	100.30	0.11	0.91	40:19	E
2,3,7,8-TCDF	0.04	0.04	0.81	21:06	J
1,2,3,7,8-PeCDF	ND	0.08	-		U
2,3,4,7,8-PeCDF	ND	0.09	-		U
1,2,3,4,7,8-HxCDF	0.15	0.04	1.09	29:55	J
1,2,3,6,7,8-HxCDF	0.09	0.04	1.10	30:03	J
2,3,4,6,7,8-HxCDF	ND	0.05	-		U
1,2,3,7,8,9-HxCDF	ND	0.05	-		U
1,2,3,4,6,7,8-HpCDF	2.04	0.18	0.97	34:02	J
1,2,3,4,7,8,9-HpCDF	ND	0.21	-		U
OCDF	13.85	0.09	0.96	40:29	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
	_			
TOTAL TODD	2	0.18	0.03	J
TOTAL PeCDD	0	ND	0.16	U
TOTAL HXCDD	5	1.56	0.07	J
TOTAL HPCDD	2	17.04	0.07	
TOTAL TCDF	1	0.04	0.04	J
TOTAL PeCDF	1	0:14	0.09	J
TOTAL HXCDF	4	1.79 🛂	0.05	` J
TOTAL HpCDF	2	10.63	0.21	
-				

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-288 Client Sample: CSH-11 QC REPORT Ionics Sample: 3-88-4 Sample size: Date collected: 4/19/95 10.15 g File: F11586 Date received: 4/20/95 Matrix: Soil Ret check: F11584

Date received: 4/20/95 Matrix: Soil Ret check: F11584
Date extracted: 4/25/95 Origin: Site G Daily cal: F11585
Date analyzed: 5/11/95 Initial cal: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.23	65.7	0.84	21:05	-
13C12-2,3,7,8-TCDD	3.62	73.6	0.75	21:42	-
13C12-1,2,3,6,7,8-HxCDD	3.61	73.2	1.31	31:04	-
13C12-1,2,3,4,6,7,8-HpCDF	5.84	59.3	1.12	34:19	-
13C12-OCDD	4.58	46.5	0.98	40:18	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.17	88.3	21:43	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.82	21:28	-
13C12-1,2,3,7,8,9-HxCDD	1.32	31:33	•

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

Phone: (713) 972-1037

REIDEL ENVIRONMENTAL SERVICES, INC. ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-288
Client Sample: CSH-13 REPORT Ionics Sample: 3-88-9

Sample size: File: Date collected: 4/19/95 10.11 g F11598 Date received: 4/20/95 Matrix: Soil Ret check: F11591 Origin: Site G Daily cal: Date extracted: 4/25/95 F11593 Initial cal: F052394C 5/12/95 Date analyzed:

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.01	•		U
1,2,3,7,8-PeCDD	ND	0.03	•		Ū
1,2,3,4,7,8-HxCDD	ND	0.39	-		U
1,2,3,6,7,8-HxCDD	28.46	0.41	1.34	31:28	
1,2,3,7,8,9-HxCDD	11.01	0.40	1.37	31:56	
1,2,3,4,6,7,8-HpCDD	874.83	0.34	1.00	36:13	Ε
OCDD	10100.93	1.50	0.87	41:06	Ε
2,3,7,8-TCDF	14.76	0.93	0.84	21:20	
1,2,3,7,8-PeCDF	ND	0.12	-		U
2,3,4,7,8-PeCDF	7.90	0.13	1.51	26:24	
1,2,3,4,7,8-HxCDF	35.87	0.64	1.28	30:19	
1,2,3,6,7,8-HxCDF	8.44	0.62	1.22	30:26	
2,3,4,6,7,8-HxCDF	10.23	0.72	1.31	31:14	
1,2,3,7,8,9-HxCDF	4.54	0.80	1.26	32:21	
1,2,3,4,6,7,8-HpCDF	610.83	1.48	1.09	34:44	Ε
1,2,3,4,7,8,9-HpCDF	ND	1.76	-		U
OCDF	3885.98	1.25	0.92	41:12	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.29	0.01	J
TOTAL PeCDD	0	ND	0.03	U
TOTAL HXCDD	4	131.39	0.41	E
TOTAL HPCDD	2	1677.27	0.34	E
TOTAL TCDF	3	31.27	0.93	E
TOTAL PeCDF	7	97.87	0.13	E
TOTAL HXCDF	10	772.81	0.80	E
TOTAL HpCDF	2	2665.08	1.76	E

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

Phone: (713) 972-1037

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS lonics Project: 95-288
Client Sample: CSH-13 QC REPORT lonics Sample: 3-88-9

Date collected: 4/19/95 Sample size: 10.11 g File: F11598 Date received: 4/20/95 Matrix: Soil Ret check: F11591 4/25/95 Origin: Daily cal: Date extracted: Site G F11593 Initial cal: Date analyzed: 5/12/95 F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	0.56	11.3	0.88	21:20	Y
13C12-2,3,7,8-TCDD	6.31	127.5	0.66	22:08	Υ
13C12-1,2,3,6,7,8-HxCDD	2.40	48.6	1.22	31:27	-
13C12-1,2,3,4,6,7,8-HpCDF	3.84	38.8	1.17	34:43	Υ
13C12-OCDD	2.60	26.3	1.78	41:05	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	6.28	253.9	22:12	Y

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.66	21:54	-
13C12-1,2,3,7,8,9-HxCDD	1.19	31:55	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

Phone: (713) 972-1037

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-288 Ionics Sample: 3-88-8 Client Sample: CSH-15 REPORT Date collected: 4/19/95 Sample size: 10.18 g File: F11597 Date received: Matrix: Soil Ret check: F11591 4/20/95 Origin: Date extracted: 4/25/95 Site G Daily cal: F11593

Initial cal:

F052394C

Phone: (713) 972-1037

Fax: (713) 784-1152

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
0.0.7.9.TCDD	ND	0.16			U
2,3,7,8-TCDD			-		
1,2,3,7,8-PeCDD	ND	0.66	-		U
1,2,3,4,7,8-HxCDD	ND	0.81	-		U
1,2,3,6,7,8-HxCDD	ND	0.84	-		U
1,2,3,7,8,9-HxCDD	ND	0.82	-		U
1,2,3,4,6,7,8-HpCDD	13.04	0.53	1.13	35:51	
OCDD	179.19	0.67	0.86	40:20	E
2,3,7,8-TCDF	2.27	1.93	0.69	21:10	
1,2,3,7,8-PeCDF	ND	0.20	-		U
2,3,4,7,8-PeCDF	ND	0.22	-		U
1,2,3,4,7,8-HxCDF	ND	0.56	-		U
1,2,3,6,7,8-HxCDF	ND	0.54	-		U
2,3,4,6,7,8-HxCDF	ND	0.63	-		U
1,2,3,7,8,9-HxCDF	ND	0.70	-		U
1,2,3,4,6,7,8-HpCDF	6.10	1.24	0.97	34:23	
1,2,3,4,7,8,9-HpCDF	ND	1.48	•		U
OCDF	29.65	0.38	0.94	40:32	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	1.81	0.16	
TOTAL PeCDD	1	2.21	0.66	
TOTAL HXCDD	1	2.15	0.84	J
TOTAL HPCDD	2	27.58	0.53	
TOTAL TCDF	9	8.52	1.93	
TOTAL PeCDF	0	1:76	0.22	
TOTAL HXCDF	2	4.84 '	0.70	
TOTAL HpCDF	2	24.35	1.48	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

Date analyzed:

5/11/95

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-15 SAMPLE ANALYSIS

OC REPORT

Ionics Project: 95-288
Ionics Sample: 3-88-8

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received: 4/19/95 4/20/95 4/25/95

Sample size: Matrix:

Origin:

10.18 g Soil Site G File: Ret check: F11597 F11591 F11593

Date extracted: Date analyzed:

4/25/95 5/11/95

Daily cal: Initial cal: F11593 F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	1.36	27.7	0.77	21:10	Y
13C12-2,3,7,8-TCDD	1.34	27.2	0.85	21:47	Y
13C12-1,2,3,6,7,8-HxCDD	0.90	18.4	1.08	31:09	Y
13C12-1,2,3,4,6,7,8-HpCDF	1.37	14.0	1.11	34:24	Υ
13C12-OCDD	1.13	11.6	0.94	40:20	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.36	96.0	21:49	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.81	21:35	•
13C12-1,2,3,7,8,9-HxCDD	1.21	31:38	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-17 SAMPLE ANALYSIS REPORT Ionics Project: 95-288 Ionics Sample: 3-88-10

Date collected:
Date received:

4/19/95 4/20/95

Sample size: Matrix:

Origin:

10 g Soil File: Ret check: F11599 F11591

Date extracted:
Date analyzed:

4/25/95 5/12/95

Site G Daily ca

Daily cal: F11593 Initial cal: F052394C

Phone: (713) 972-1037

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.05	•		U
1,2,3,7,8-PeCDD	ND	0.12	-		U
1,2,3,4,7,8-HxCDD	ND	0.12	-		U
1,2,3,6,7,8-HxCDD	0.89	0.13	1.29	31:14	J
1,2,3,7,8,9-HxCDD	ND	0.12	-		U
1,2,3,4,6,7,8-HpCDD	29.43	0.16	1.04	35:56	
OCDD	401.35	0.52	0.88	40:26	E
2,3,7,8-TCDF	0.49	0.21	0.69	21:15	J
1,2,3,7,8-PeCDF	ND	0.05	-		U
2,3,4,7,8-PeCDF	ND	0.05	-		U
1,2,3,4,7,8-HxCDF	1.98	0.18	1.11	30:04	J
1,2,3,6,7,8-HxCDF	1.29	0.17	1.21	30:13	J
2,3,4,6,7,8-HxCDF	ND	0.20	-		U
1,2,3,7,8,9-HxCDF	ND	0.22	-		U
1,2,3,4,6,7,8-HpCDF	14.96	0.49	1.03	34:29	
1,2,3,4,7,8,9-HpCDF	1.18	0.58	1.07	36:35	J
OCDF	85.10	0.77	0.91	40:36	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TODD	1	1.85	0.05	
TOTAL PeCDD	0	ND	0.12	U
TOTAL HXCDD	3	4.87	0.13	
TOTAL HPCDD	2	30.02	0.16	
TOTAL TCDF	1	0.49	0.21	J
TOTAL PeCDF	1	1.09	0.05	
TOTAL HxCDF	4	13.32	0.22	
TOTAL HPCDF	3	18.85	0.58	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-288
Client Sample: CSH-17 QC REPORT Ionics Sample: 3-88-10

4/19/95 Sample size: File: Date collected: 10 g F11599 Date received: 4/20/95 Matrix: Soil Ret check: F11591 Date extracted: 4/25/95 Origin: Site G Daily cal: F11593 5/12/95 Initial cal: Date analyzed: F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	2.33	46.5	0.82	21:14	
13C12-2,3,7,8-TCDD	3.54	70.9	0.70	21:50	-
13C12-1,2,3,6,7,8-HxCDD	1.82	36.4	1.26	31:13	Υ
13C12-1,2,3,4,6,7,8-HpCDF	2.66	26.6	1.04	34:28	Υ
13C12-OCDD	2.02	20.2	0.96	40:25	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.26	90.4	21:51	-

Ratio	RT (min)	Flags
0.82	21:37	-
1.30	31:42	-
	0.82	0.82 21:37

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occuring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-288 Client Sample: CSH-19 REPORT Ionics Sample: 3-88-3

Sample size: File: Date collected: 4/19/95 10.06 g F11583 Matrix: Soil Date received: 4/20/95 Ret check: F11576 4/25/95 Date extracted: Origin: Site G Daily cal: F11577 Initial cal: F052394C Date analyzed: 5/10/95

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.05	-		U
1,2,3,7,8-PeCDD	ND	0.08	-		Ū
1,2,3,4,7,8-HxCDD	ND	0.15	-		U
1,2,3,6,7,8-HxCDD	ND	0.16	-		U
1,2,3,7,8,9-HxCDD	ND	0.15	-		U
1,2,3,4,6,7,8-HpCDD	10.60	0.20	1.06	35:54	
OCDD	152.69	0.23	0.91	40:25	Ε
2,3,7,8-TCDF	0.44	0.05	0.80	21:12	J
1,2,3,7,8-PeCDF -	ND	0.04	-		U
2,3,4,7,8-PeCDF	ND	0.04	-		U
1,2,3,4,7,8-HxCDF	1.44	0.21	1.29	30:00	J
1,2,3,6,7,8-HxCDF	0.31	0.20	1.22	30:09	J
2,3,4,6,7,8-HxCDF	ND	0.23	-		Ų
1,2,3,7,8,9-HxCDF	ND	0.26	-		U
1,2,3,4,6,7,8-HpCDF	6.33	0.26	1.12	34:26	
1,2,3,4,7,8,9-HpCDF	ND	0.31	-		U
OCDF	16.70	0.18	0.95	40:35	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
	_			· · · · · · · · · · · · · · · · · · ·
TOTAL TODD	0	ND	0.05	U
TOTAL PeCDD	0	ND	0.08	U
TOTAL HXCDD	1	0.87	0.16	J
TOTAL HPCDD	2	19.91	0.20	
TOTAL TCDF	1	0.44	0.05	J
TOTAL PeCDF	2	1.25	0.04	
TOTAL HXCDF	4	6.20 ,	0.26	
TOTAL HpCDF	2	16.33	0.31	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-19 SAMPLE ANALYSIS
OC REPORT

Ionics Project: 95-288
Ionics Sample: 3-88-3

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received: 4/19/95 4/20/95 4/25/95 Sample size: Matrix:

Origin:

10.06 g Soil File: Ret check: F11583 F11576

Date extracted:
Date analyzed:

4/25/95 5/10/95 Site G

Daily cal: Initial cal: F11577 F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.16	63.6	0.85	21:11	_
13C12-2,3,7,8-TCDD	5.01	100.7	0.71	21:48	<u>-</u>
13C12-1,2,3,6,7,8-HxCDD	3.10	62.5	1.32	31:10	-
13C12-1,2,3,4,6,7,8-HpCDF	5.34	53.7	1.15	34:25	-
13C12-OCDD	4.93	49.6	0.98	40:23	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.23	89.5	21:49	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	21:35	-
13C12-1,2,3,7,8,9-HxCDD	1.31	31:39	-
			•

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-21 SAMPLE ANALYSIS REPORT Ionics Project: 95-288 Ionics Sample: 3-88-6

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected:

4/19/95 4/20/95 Sample size:

10.95 g Soil File: Ret check: F11588 F11584

Date received: Date extracted: Date analyzed:

4/25/95 5/11/95 Matrix: Origin:

Site G

Daily cal: Initial cal: F11585 F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.18			U
1,2,3,7,8-PeCDD	ND	0.45	-		U
1,2,3,4,7,8-HxCDD	2.34	0.19	1.30	31:05	
1,2,3,6,7,8-HxCDD	2.93	0.20	1.26	31:11	
1,2,3,7,8,9-HxCDD	1.16	0.20	1.31	31:40	J
1,2,3,4,6,7,8-HpCDD	103.49	0.23	1.06	35:53	E
OCDD	1431.00	0.39	0.93	40:28	Ε
2,3,7,8-TCDF	1.74	0.08	0.77	21:10	
1,2,3,7,8-PeCDF	ND	0.20	-		U
2,3,4,7,8-PeCDF	ND	0.21	-		U
1,2,3,4,7,8-HxCDF	2.93	0.31	1.27	30:02	
1,2,3,6,7,8-HxCDF	1.38	0.30	1.26	30:09	J
2,3,4,6,7,8-HxCDF	0.36	0.35	1.19	30:56	J
1,2,3,7,8,9-HxCDF	ND	0.39	-		U
1,2,3,4,6,7,8-HpCDF	39.60	0.33	1.08	34:28	
1,2,3,4,7,8,9-HpCDF	3.42	0.39	1.22	36:32	
OCDF	172.30	0.40	0.93	40:35	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
				V - F
TOTAL TODD	5	11.87	0.18	1
TOTAL PeCDD	3	4.16	0.45	
TOTAL HXCDD	7	22.67	0.20	
TOTAL HPCDD	2	192.32	0.23	E
TOTAL TCDF	10	10.74	0.08	
TOTAL PeCDF	3	1:86	0.21	
TOTAL HXCDF	7	37.03	0.39	•
TOTAL HpCDF	3	153.34	0.39	E

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-288 Client Sample: CSH-21 QC REPORT Ionics Sample: 3-88-6 Sample size: Date collected: 4/19/95 10.95 g File: F11588 Date received: 4/20/95 Matrix: Soil Ret check: F11584 Origin: 4/25/95 Site G Daily cal: Date extracted: F11585 5/11/95 Initial cal: F052394C Date analyzed:

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	2.55	55.9	0.83	21:10	•
13C12-2,3,7,8-TCDD	2.76	60.5	0.78	21:48	-
13C12-1,2,3,6,7,8-HxCDD	1.81	39.7	1.37	31:11	Υ
13C12-1,2,3,4,6,7,8-HpCDF	2.56	28.0	1.06	34:26	Υ
13C12-OCDD	1.64	18.0	1.07	40:26	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.07	90.6	21:48	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	21:33	-
13C12-1,2,3,7,8,9-HxCDD	1.37	31:38	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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REIDEL ENVIRONMENTAL SERVICES, INC. ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

SAMPLE ANALYSIS Ionics Project: 95-288 Client Project: 8168 REPORT Ionics Sample: 3-88-1 Client Sample: CSH-23 Date collected: 4/19/95 Sample size: 10.11 g File: F11581 Matrix: Soil Ret check: Date received: 4/20/95 F11576 Origin: Site G Daily cal: Date extracted: 4/25/95 F11577 Initial cal: F052394C Date analyzed: 5/10/95

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.01	•		U
1,2,3,7,8-PeCDD	0.89	0.05	1.29	26:35	J
1,2,3,4,7,8-HxCDD	ND	0.08	-		U
1,2,3,6,7,8-HxCDD	11.21	0.08	1.38	31:10	
1,2,3,7,8,9-HxCDD	2.12	0.08	1.35	31:38	J
1,2,3,4,6,7,8-HpCDD	431.74	0.04	1.05	35:56	Ε
OCDD	4918.36	0.54	0.92	40:51	E
2,3,7,8-TCDF	0.25	0.04	0.75	21:11	J
1,2,3,7,8-PeCDF	ND	0.02	-		U
2,3,4,7,8-PeCDF	ND	0.02	-		U
1,2,3,4,7,8-HxCDF	4.84	0.05	1.27	29:59	
1,2,3,6,7,8-HxCDF	2.92	0.05	1.30	30:08	
2,3,4,6,7,8-HxCDF	1.13	0.06	1.44	49:56	J
1,2,3,7,8,9-HxCDF	0.39	0.07	1.19	32:04	J
1,2,3,4,6,7,8-HpCDF	123.21	0.16	1.06	34:26	E
1,2,3,4,7,8,9-HpCDF	8.66	0.18	1.07	36:31	
OCDF	874.15	0.34	0.92	40:55	Ε

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	1	0.30	0.01	J
TOTAL PeCDD	4	2.03	0.05	
TOTAL HXCDD	9	66.27	80.0	E
TOTAL HPCDD	2	825.65	0.04	E
TOTAL TCDF	9	1.17	0.04	
TOTAL PeCDF	2	2.54	0.02	
TOTAL HXCDF	9	107.65	0.07	E
TOTAL HPCDF	4	665.73	0.18	E

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-288
Client Sample: CSH-23 QC REPORT Ionics Sample: 3-88-1

Date collected: 4/19/95 Sample size: 10.11 g File: F11581 Date received: 4/20/95 Matrix: Soil Ret check: F11576 Origin: Daily cal: Date extracted: 4/25/95 Site G F11577 5/10/95 Initial cal: F052394C Date analyzed:

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.51	71.0	0.85	21:10	-
13C12-2,3,7,8-TCDD	4.17	84.3	0.77	21:47	-
13C12-1,2,3,6,7,8-HxCDD	3.40	68.8	1.37	31:09	-
13C12-1,2,3,4,6,7,8-HpCDF	6.18	62.5	1.14	34:25	-
13C12-OCDD	5.63	57.0	1.48	40:51	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.20	89.1	21:48	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	21:34	-
13C12-1,2,3,7,8,9-HxCDD	1.32	31:38	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: OS-1 SAMPLE ANALYSIS REPORT Ionics Project: 95-288 Ionics Sample: 3-88-13

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received: 4/17/95 4/20/95 Sample size: Matrix:

10.16 g Soil File: Ret check: F11604 F11601 F11602

Date extracted: Date analyzed:

4/25/95 5/15/95 Origin:

Site G

Daily cal:

F11602 F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	0.61	0.08	0.76	21:50	J
1,2,3,7,8-PeCDD	6.79	0.21	1.67	26:36	•
1,2,3,4,7,8-HxCDD	27.37	0.56	1.34	31:07	
1,2,3,6,7,8-HxCDD	43.10	0.59	1.27	31:15	
1,2,3,7,8,9-HxCDD	31.11	0.57	1.30	31:42	
1,2,3,4,6,7,8-HpCDD	1356.23	0.21	0.98	36:01	Ε
OCDD	11299.96	1.55	0.86	40:55	E
2,3,7,8-TCDF	0.47	0.24	0.71	21:13	J
1,2,3,7,8-PeCDF	ND	0.13	-		U
2,3,4,7,8-PeCDF	ND	0.14	-		U
1,2,3,4,7,8-HxCDF	8.27	0.75	1.27	30:02	
1,2,3,6,7,8-HxCDF	9.54	0.73	1.21	30:08	
2,3,4,6,7,8-HxCDF	3.88	0.85	1.39	31:00	
1,2,3,7,8,9-HxCDF	1.27	0.94	1.20	32:06	J
1,2,3,4,6,7,8-HpCDF	404.98	1.13	1.04	34:30	Ε
1,2,3,4,7,8,9-HpCDF	26.75	1.34	1.04	36:35	,
OCDF	2040.46	0.86	0.90	40:45	E

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	5	2.45	0.08	
TOTAL PeCDD	3	16.51	0.21	
TOTAL HxCDD	9	257.09	0.59	E
TOTAL HPCDD	2	2582.31	0.21	Ε´
TOTAL TCDF	7	5.31	0.24	
TOTAL PeCDF	5	36.41	0.14	E
TOTAL HXCDF	9	352.85	0.94	E
TOTAL HpCDF	4	1862.64	1.34	Е

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168
Client Sample: OS-1

Date collected: 4/17/95

Date received: 4/20/95

Sample size: 10.16 g

Matrix: Soil

Bet check: F11601

Date received: 4/20/95 Matrix: Soil Ret check: F11601 4/25/95 Origin: Site G Daily cal: F11602 Date extracted: Initial cal: F052394C Date analyzed: 5/15/95

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	3.24	65.9	0.81	21:12	-
13C12-2,3,7,8-TCDD	3.98	80.8	0.75	21:49	•
13C12-1,2,3,6,7,8-HxCDD	2.27	46.1	1.28	31:13	•
13C12-1,2,3,4,6,7,8-HpCDF	4.11	41.7	1.04	34:28	-
13C12-OCDD	3.13	31.8	1.98	40:55	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.18	88.4	21:50	-

21:35	•
31:41	-
3	31:41

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: OS-2 SAMPLE ANALYSIS REPORT Ionics Project: 95-288 Ionics Sample: 3-88-14

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received:

4/17/95 4/20/95 Sample size: Matrix:

Origin:

10.07 g Soil File: Ret check: F11605 F11601

Date extracted: Date analyzed:

4/25/95 5/15/95 Site G

Daily cal: Initial cal: F11602 F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.29	_		U
1,2,3,7,8-PeCDD	ND	0.33	-		U
1,2,3,4,7,8-HxCDD	ND	0.45	-		U
1,2,3,6,7,8-HxCDD	ND	0.47	-		U
1,2,3,7,8,9-HxCDD	ND	0.46	-		U
1,2,3,4,6,7,8-HpCDD	7.72	0.49	0.94	35:51	
OCDD	78.80	0.49	0.87	40:20	
2,3,7,8-TCDF	ND	0.17	-		U
1,2,3,7,8-PeCDF	ND	0.12	-		U
2,3,4,7,8-PeCDF	ND	0.12	•		U
1,2,3,4,7,8-HxCDF	ND	0.22	-		U
1,2,3,6,7,8-HxCDF	ND	0.22	•		U
2,3,4,6,7,8-HxCDF	ND	0.25	-		U
1,2,3,7,8,9-HxCDF	ND	0.28	•		U
1,2,3,4,6,7,8-HpCDF	1.80	0.48	1.06	34:23	J
1,2,3,4,7,8,9-HpCDF	ND	0.57	-		U
OCDF	7.04	0.48	0.92	40:32	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TCDD	0	ND	0.29	U
TOTAL PeCDD	0	ND	0.33	U
TOTAL HXCDD	0	ND	0.47	U
TOTAL HpCDD	2	15.17	0.49	
TOTAL TCDF	0	ND	0.17	U
TOTAL PeCDF	0	ND	0.12	U
TOTAL HXCDF	2	1.69 🕡	0.28	J
TOTAL HPCDF	2	6.72	0.57	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS lonics Project: 95-288 Client Sample: OS-2 QC REPORT lonics Sample: 3-88-14

Date collected: 4/17/95 Sample size: 10.07 g File: F11605 4/20/95 Matrix: Soil Ret check: F11601 Date received: Site G Origin: Daily cal: Date extracted: 4/25/95 F11602 Initial cal: 5/15/95 F052394C Date analyzed:

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	2.64	53.1	0.82	21:10	-
13C12-2,3,7,8-TCDD	2.52	50.7	0.80	21:47	-
13C12-1,2,3,6,7,8-HxCDD	2.58	52.0	1.20	31:07	-
13C12-1,2,3,4,6,7,8-HpCDF	3.68	37.1	1.08	34:23	Υ
13C12-OCDD	3.03	30.5	0.92	40:20	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.31	92.9	21:47	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.84	21:33	-
13C12-1,2,3,7,8,9-HxCDD	1.29	31:38	•

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-288 Client Sample: OS-DA REPORT Ionics Sample: 3-88-12

Sample size: Date collected: 4/17/95 10.03 g File: F11603 Matrix: Date received: 4/20/95 Soil Ret check: F11601 Origin: Site G Daily cal: Date extracted: 4/25/95 F11602 Initial cal: Date analyzed: 5/15/95 F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.11	-		υ
1,2,3,7,8-PeCDD	ND	0.24	-		U
1,2,3,4,7,8-HxCDD	ND	0.29	-		U
1,2,3,6,7,8-HxCDD	ND	0.30	-		U
1,2,3,7,8,9-HxCDD	ND	0.30	-		U
1,2,3,4,6,7,8-HpCDD	22.44	0.66	0.94	35:43	
OCDD	219.93	0.51	0.91	40:14	E
2,3,7,8-TCDF	ND	0.10	-		U
1,2,3,7,8-PeCDF ~	ND	0.18	-		U
2,3,4,7,8-PeCDF	ND	0.20	-		U
1,2,3,4,7,8-HxCDF	ND	0.22	-		U
1,2,3,6,7,8-HxCDF	ND	0.22	-		U
2,3,4,6,7,8-HxCDF	ND	0.25	-		U
1,2,3,7,8,9-HxCDF	ND	0.28	-		U
1,2,3,4,6,7,8-HpCDF	5.16	0.56	1.08	34:17	
1,2,3,4,7,8,9-HpCDF	ND	0.67	-		U
OCDF	24.72	0.18	0.97	40:25	

Total analytes*	Number	Conc (ppb)	DL (ppb)	Flags
TOTAL TODD	0	ND	0.11	U
TOTAL PeCDD	0	ND	0.24	Ū
TOTAL HXCDD	1	1.07	0.30	J
TOTAL HPCDD	2	41.22	0.66	
TOTAL TCDF	0	ND	0.10	U
TOTAL PeCDF	0	ND	0.20	U
TOTAL HXCDF	1	1.61 ,	0.28	J
TOTAL HPCDF	2	22.67	0.67	

^{*}Includes non-specific analytes, in addition to those chlorinated at carbon atoms 2, 3, 7, and 8.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168	SAMPLE ANALYSIS	lonics Project: 95-288
Client Sample: OS-DA	QC REPORT	lonics Sample: 3-88-12
	•	

Date collected: 4/17/95 Sample size: File: F11603 10.03 g Date received: 4/20/95 Matrix: Soil Ret check: F11601 Date extracted: 4/25/95 Origin: Site G Daily cal: F11602 Initial cal: Date analyzed: 5/15/95 F052394C

internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDF	1.60	32.2	0.79	21:04	Υ
13C12-2,3,7,8-TCDD	1.82	36.6	0.68	21:41	Υ
13C12-1,2,3,6,7,8-HxCDD	1.76	35.4	1.21	31:00	Υ
13C12-1,2,3,4,6,7,8-HpCDF	2.67	26.8	1.09	34:16	Υ
13C12-OCDD	2.40	24.1	0.89	40:14	Υ

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37CI4-2,3,7,8-TCDD	2.28	91.7	21:42	-

Recovery standards	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.80	21:27	•
13C12-1,2,3,7,8,9-HxCDD	1.22	31:30	-

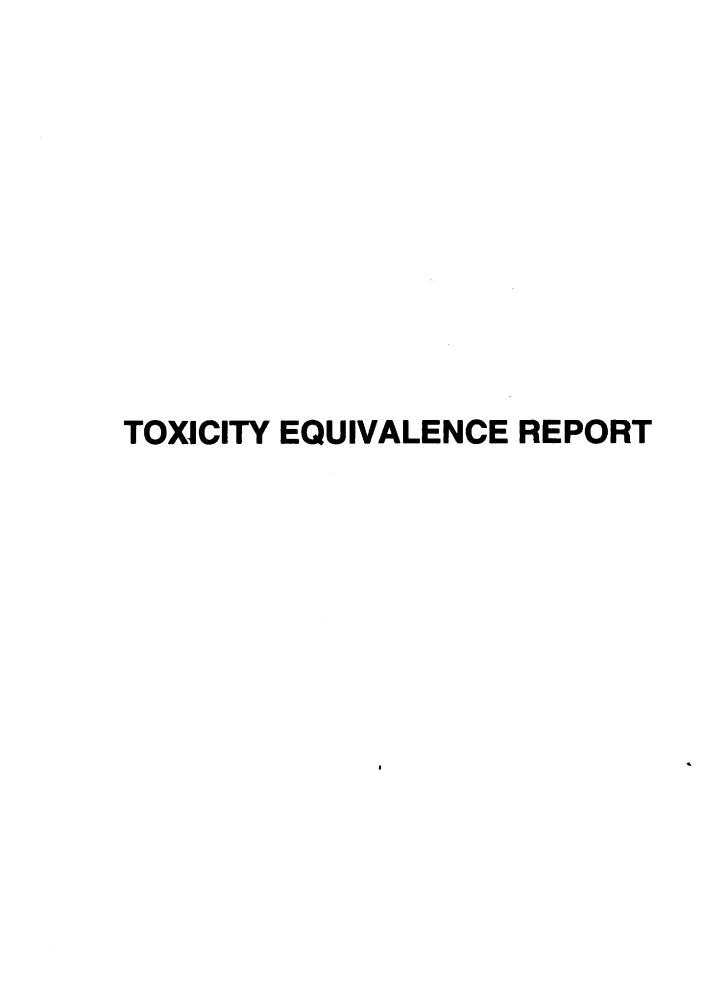
Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-288 Client Sample: CSH-1 TEF REPORT Ionics Sample: 3-91-11 Date collected: 4/18/95 Sample size: 10.6 g File: F11606 Matrix: Soil Ret check: F11601 Date received: 4/24/95 Date extracted: 5/1/95 Origin: Site G Daily cal: F11602 Date analyzed: 5/15/95 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb
2,3,7,8-TCDD	ND	×	1.000	=	-
1,2,3,7,8-PeCDD	ND	×	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	×	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	5.33	x	0.010	=	0.053
OCDD	48.31	x	0.001	=	0.048
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	X	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	ND	x	0.010	=	-
1,2,3,4,7,8,9-HpCDF	ND	X	0.010	=	-
OCDF	9.09	x	0.001	=	0.009

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.11 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

SAMPLE ANALYSIS Client Project: 8168 Ionics Project: 95-288 Client Sample: CSH-3 TEF REPORT Ionics Sample: 3-88-5 Date collected: 4/19/95 Sample size: 10.42 g F11587 File: Soil 4/20/95 Matrix: Ret check: Date received: F11584 4/25/95 Origin: Site G Daily cal: Date extracted: F11585 Date analyzed: 5/11/95 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	×	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	×	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	×	0.100	=	-
1,2,3,4,6,7,8-HpCDD	2.29	x	0.010	=	0.023
OCDD	28.69	×	0.001	=	0.029
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	×	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	×	0.100	==	
1,2,3,6,7,8-HxCDF	ND	×	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	×	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	ND	x	0.010	=	-
1,2,3,4,7,8,9-HpCDF	ND	×	0.010	=	-
OCDF	2.74	×	0.001	=	0.003

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.055 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

SAMPLE ANALYSIS Ionics Project: 95-288 **Client Project: 8168** Client Sample: CSH-5 TEF REPORT Ionics Sample: 3-88-7 Date collected: 4/19/95 Sample size: 10.02 g File: F11607 Matrix: Soil Date received: 4/20/95 Ret check: F11601 Origin: Date extracted: 4/25/95 Site G Daily cal: F11602 Initial cal: Date analyzed: 5/15/95 F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb
2,3,7,8-TCDD	ND	x	1.000	=	•
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	3.94	x	0.010	=	0.039
OCDD	52.79	X	0.001	=	0.053
2,3,7,8-TCDF	ND	×	0.100	=	•
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	×	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	×	0.100	=	-
1,2,3,4,6,7,8-HpCDF	1.52	x	0.010	=	0.015
1,2,3,4,7,8,9-HpCDF	ND	x	0.010	=	-
OCDF	5.69	x	0.001	=	0.006

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.113 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

SAMPLE ANALYSIS Client Project: 8168 Ionics Project: 95-288 TEF REPORT Ionics Sample: 3-88-2 Client Sample: CSH-7 Sample size: Date collected: 4/19/95 10.02 g File: F11582 Matrix: Soil Date received: 4/20/95 Ret check: F11576 Origin: Site G Date extracted: 4/25/95 Daily cal: F11577 Date analyzed: 5/10/95 Initial cal: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	X	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	9.99	Х	0.010	=	0.100
OCDD	133.93	X	0.001	=	0.134
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	X	0.050	=	-
2,3,4,7,8-PeCDF	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	X	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	X	0.100	=	•
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	2.82	×	0.010	=	0.028
1,2,3,4,7,8,9-HpCDF	ND	X	0.010	=	- ,
OCDF	11.65	x	0.001	=	0.012

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.274 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: Client Sample		SAMPLE ANALYSIS TEF REPORT		lonics Proj Ionics Samp	ect: 95-288 ble: 3-88-11
Date collected:	4/19/95	Sample size:	10.02 g	File:	F11600
Date received:	4/20/95	Matrix:	Soil	Ret check:	F11591
Date extracted:	4/25/95	Origin:	Site G	Daily cal:	F11593
Date analyzed:	5/12/95			Initial cal:	F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	. · X	1.000	7	-
1,2,3,7,8-PeCDD	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	Х	0.100	=	-
1,2,3,6,7,8-HxCDD	1.02	Χ .	0.100	=	0.102
1,2,3,7,8,9-HxCDD	ND	Х	0.100	=	•
1,2,3,4,6,7,8-HpCDD	13.45	X	0.010	=	0.135
OCDD	163.07	x	0.001	=	0.163
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF -	ND	X	0.050	=	-
2,3,4,7,8-PeCDF	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	X	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	X	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	X	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	X	0.100	=	-
1,2,3,4,6,7,8-HpCDF	3.09	X	0.010	=	0.031
1,2,3,4,7,8,9-HpCDF	ND	X	0.010	=	-
OCDF	19.13	x	0.001	=	0.019

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.45 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project Client Sample		SAMPLE ANALYSIS TEF REPORT			ect: 95-288 ple: 3-88-4
Date collected:	4/19/95	Sample size:	10.15 g	File:	F11586
Date received:	4/20/95	Matrix:	Soil	Ret check:	F11584
Date extracted:	4/25/95	Origin:	Site G	Daily cal:	F11585
Date analyzed:	5/11/95			Initial cal:	F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDD	0.14	X	0.100	=	0.014
1,2,3,6,7,8-HxCDD	0.19	X	0.100	=	0.019
1,2,3,7,8,9-HxCDD	0.20	X	0.100	=	0.020
1,2,3,4,6,7,8-HpCDD	8.26	х	0.010	=	0.083
OCDD	100.30	x	0.001	=	0.100
2,3,7,8-TCDF	0.04	x	0.100	=	0.004
1,2,3,7,8-PeCDF	ND	X	0.050	=	-
2,3,4,7,8-PeCDF	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDF	0.15	X	0.100	=	0.015
1,2,3,6,7,8-HxCDF	0.09	X	0.100	=	0.009
2,3,4,6,7,8-HxCDF	ND	X	0.100	=	•
1,2,3,7,8,9-HxCDF	ND	X	0.100	=	-
1,2,3,4,6,7,8-HpCDF	2.04	X	0.010	=	0.020
1,2,3,4,7,8,9-HpCDF	ND	X	0.010	=	-
OCDF	13.85	X	0.001	=	0.014

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.298 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-288 Client Sample: CSH-13 TEF REPORT Ionics Sample: 3-88-9 Date collected: 4/19/95 Sample size: 10.11 g File: F11598 Date received: 4/20/95 Matrix: Soil Ret check: F11591 Origin: Date extracted: 4/25/95 Site G Daily cal: F11593 5/12/95 Initial cal: Date analyzed: F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb
2,3,7,8-TCDD	ND	x	1.000	=	_
1,2,3,7,8-PeCDD	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	X	0.100	=	-
1,2,3,6,7,8-HxCDD	28.46	X	0.100	=	2.846
1,2,3,7,8,9-HxCDD	11.01	X	0.100	=	1.101
1,2,3,4,6,7,8-HpCDD	874.83	X	0.010	=	8.748
OCDD	10100.93	X	0.001	=	10.101
2,3,7,8-TCDF	14.76	x	0.100	=	1.476
1,2,3,7,8-PeCDF	ND	X	0.050	=	-
2,3,4,7,8-PeCDF	7.90	X	0.500	=	3.952
1,2,3,4,7,8-HxCDF	35.87	X	0.100	=	3.587
1,2,3,6,7,8-HxCDF	8.44	X	0.100	=	0.844
2,3,4,6,7,8-HxCDF	10.23	X	0.100	=	1.023
1,2,3,7,8,9-HxCDF	4.54	X	0.100	=	0.454
1,2,3,4,6,7,8-HpCDF	610.83	X	0.010	=	6.108
1,2,3,4,7,8,9-HpCDF	ND	X	0.010	=	-
OCDF	3885.98	X	0.001	=	3.886

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 44.126 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: Client Sample			SAMPLE ANALYSIS TEF REPORT		ect: 95-288 ple: 3-88-8
Date collected:	4/19/95	Sample size:	10.18 g	File:	F11597
Date received:	4/20/95	Matrix:	Soil	Ret check:	F11591
Date extracted:	4/25/95	Origin:	Site G	Daily cal:	F11593
Date analyzed:	5/11/95			Initial cal:	F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	•
1,2,3,6,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	13.04	x	0.010	=	0.130
OCDD	179.19	x	0.001	=	0.179
2,3,7,8-TCDF	2.27	x	0.100	=	0.227
1,2,3,7,8-PeCDF -	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	6.10	x	0.010	=	0.061
1,2,3,4,7,8,9-HpCDF	ND	X	0.010	=	-
OCDF	29.65	Х	0.001	=	0.030

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.627 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Faotors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project Client Sample		SAMPLE ANA TEF REPO		Ionics Proj Ionics Samp	ect: 95-288 ble: 3-88-10
Date collected:	4/19/95	Sample size:	10 g	File:	F11599
Date received:	4/20/95	Matrix:	Soil	Ret check:	F11591
Date extracted:	4/25/95	Origin:	Site G	Daily cal:	F11593
Date analyzed:	5/12/95			Initial cal:	F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	_
1,2,3,7,8-PeCDD	ND	x	0.500	=	•
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	•
1,2,3,6,7,8-HxCDD	0.89	x	0.100	=	0.089
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	29.43	x	0.010	=	0.294
OCDD	401.35	X	0.001	=	0.401
2,3,7,8-TCDF	0.49	x	0.100	=	0.049
1,2,3,7,8-PeCDF	ND	X	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	1.98	×	0.100	=	0.198
1,2,3,6,7,8-HxCDF	1.29	x	0.100	=	0.129
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	14.96	x	0.010	=	0.150
1,2,3,4,7,8,9-HpCDF	1.18	X	0.010	=	0.012
OCDF	85.10	x	0.001	=	0.085

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 1.407 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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REIDEL ENVIRONMENTAL SERVICES, INC. ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project Client Sample						
Date collected:	4/19/95	Sample size:	10.06 g	File:	F11583	
Date received:	4/20/95	Matrix:	Soil	Ret check:	F11576	
Date extracted:	4/25/95	Origin:	Site G	Daily cal:	F11577	
Date analyzed:	5/10/95			Initial cal:	F052394C	

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	X	1.000	=	
1,2,3,7,8-PeCDD	ND	X	0.500	=	•
1,2,3,4,7,8-HxCDD	ND	X	0.100	=	•
1,2,3,6,7,8-HxCDD	ND	X	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	X	0.100	=	-
1,2,3,4,6,7,8-HpCDD	10.60	X	0.010	=	0.106
OCDD	152.69	x	0.001	=	0.153
2,3,7,8-TCDF	0.44	x	0.100	=	0.044
1,2,3,7,8-PeCDF	ND	X	0.050	=	-
2,3,4,7,8-PeCDF	ND	X	0.500	=	•
1,2,3,4,7,8-HxCDF	1.44	X	0.100	=	0.144
1,2,3,6,7,8-HxCDF	0.31	X	0.100	=	0.031
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	X	0.100	=	•
1,2,3,4,6,7,8-HpCDF	6.33	X	0.010	=	0.063
1,2,3,4,7,8,9-HpCDF	ND	X	0.010	=	-
OCDF	16.70	X	0.001	=	0.017

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.558 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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REIDEL ENVIRONMENTAL SERVICES, INC. ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project Client Sample		SAMPLE ANALYSIS TEF REPORT			ect: 95-288 ipie: 3-88-6
Date collected:	4/19/95	Sample size:	10.95 g	File:	F11588
Date received:	4/20/95	Matrix:	Soil	Ret check:	F11584
Date extracted:	4/25/95	Origin:	Site G	Daily cal:	F11585
Date analyzed:	5/11/95			Initial cal:	F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDD	2.34	X	0.100	=	0.234
1,2,3,6,7,8-HxCDD	2.93	X	0.100	=	0.293
1,2,3,7,8,9-HxCDD	1.16	X	0.100	=	0.116
1,2,3,4,6,7,8-HpCDD	103.49	X	0.010	=	1.035
OCDD	1431.00	X	0.001	=	1.431
2,3,7,8-TCDF	1.74	×	0.100	=	0.174
1,2,3,7,8-PeCDF	ND	X	0.050	=	-
2,3,4,7,8-PeCDF	ND	X	0.500	=	•
1,2,3,4,7,8-HxCDF	2.93	X	0.100	=	0.293
1,2,3,6,7,8-HxCDF	1.38	X	0.100	=	0.138
2,3,4,6,7,8-HxCDF	0.36	X	0.100	=	0.036
1,2,3,7,8,9-HxCDF	ND	X	0.100	=	-
1,2,3,4,6,7,8-HpCDF	39.60	X	0.010	=	0.396
1,2,3,4,7,8,9-HpCDF	3.42	X	0.010	-	0.034
OCDF	172.30	X	0.001	=	0.172

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 4.352 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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REIDEL ENVIRONMENTAL SERVICES, INC. ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project Client Sample		SAMPLE ANALYSIS TEF REPORT			ect: 95-288 iple: 3-88-1
Date collected:	4/19/95	Sample size:	10.11 g	File:	F11581
Date received:	4/20/95	Matrix:	Soil	Ret check:	F11576
Date extracted:	4/25/95	Origin:	Site G	Daily cal:	F11577
Date analyzed:	5/10/95	-		Initial cal:	F052394C

Specific analytes	Conc (ppb)		TEF	***************************************	TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	•
1,2,3,7,8-PeCDD	0.89	X	0.500	=	0.445
1,2,3,4,7,8-HxCDD	ND	X	0.100	=	-
1,2,3,6,7,8-HxCDD	11.21	X	0.100	=	1.121
1,2,3,7,8,9-HxCDD	2.12	X	0.100	=	0.212
1,2,3,4,6,7,8-HpCDD	431.74	X	0.010	=	4.317
OCDD	4918.36	x	0.001	=	4.918
2,3,7,8-TCDF	0.25	x	0.100	=	0.025
1,2,3,7,8-PeCDF	ND	X	0.050	=	-
2,3,4,7,8-PeCDF	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDF	4.84	X	0.100	=	0.484
1,2,3,6,7,8-HxCDF	2.92	X	0.100	=	0.292
2,3,4,6,7,8-HxCDF	1.13	X	0.100	=	0.113
1,2,3,7,8,9-HxCDF	0.39	X	0.100	=	0.039
1,2,3,4,6,7,8-HpCDF	123.21	X	0.010	=	1.232
1,2,3,4,7,8,9-HpCDF	8.66	X	0.010	=	0.087
OCDF	874.15	X	0.001	=	0.874

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 14.159 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Ionics Project: 95-288 Ionics Sample: 3-88-13 Client Sample: OS-1 TEF REPORT Sample size: Date collected: 4/17/95 10.16 g File: F11604 Soil Matrix: Ret check: Date received: 4/20/95 F11601 Site G Date extracted: 4/25/95 Origin: Daily cal: F11602 Initial cal: Date analyzed: 5/15/95 F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	0.61	x	1.000	=	0.607
1,2,3,7,8-PeCDD	6.79	X	0.500	=	3.395
1,2,3,4,7,8-HxCDD	27.37	X	0.100	=	2.737
1,2,3,6,7,8-HxCDD	43.10	X	0.100	=	4.310
1,2,3,7,8,9-HxCDD	31.11	X	0.100	=	3.111
1,2,3,4,6,7,8-HpCDD	1356.23	X	0.010	=	13.562
OCDD	11299.96	X	0.001	=	11.300
2,3,7,8-TCDF	0.47	x	0.100	=	0.047
1,2,3,7,8-PeCDF	ND	X	0.050	=	•
2,3,4,7,8-PeCDF	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDF	8.27	X	0.100	=	0.827
1,2,3,6,7,8-HxCDF	9.54	X	0.100	=	0.954
2,3,4,6,7,8-HxCDF	3.88	X	0.100	=	0.388
1,2,3,7,8,9-HxCDF	1.27	X	0.100	=	0.127
1,2,3,4,6,7,8-HpCDF	404.98	X	0.010	=	4.050
1,2,3,4,7,8,9-HpCDF	26.75	X	0.010	=	0.268
OCDF	2040.46	X	0.001	=	2.040

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 47.723 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

Phone: (713) 972-1037

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

SAMPLE ANALYSIS Ionics Project: 95-288 Client Project: 8168 Client Sample: OS-2 TEF REPORT Ionics Sample: 3-88-14 Sample size: 10.07 g File: Date collected: 4/17/95 F11605 4/20/95 Matrix: Soil Ret check: Date received: F11601 4/25/95 Origin: Site G Daily cal: F11602 Date extracted: Initial cal: Date analyzed: 5/15/95 F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	-
1,2,3,7,8-PeCDD	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	•
1,2,3,4,6,7,8-HpCDD	7.72	x	0.010	=	0.077
OCDD	78.80	x	0.001	=	0.079
2,3,7,8-TCDF	ND	×	0.100	=	•
1,2,3,7,8-PeCDF	ND	×	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	×	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	-
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDF	1.80	×	0.010	=	0.018
1,2,3,4,7,8,9-HpCDF	ND	×	0.010	=	-
OCDF	7.04	x	0.001	=	0.007

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.181 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project Client Sample		SAMPLE ANA TEF REPO		lonics Proj Ionics Samp	ect: 95-288 ble: 3-88-12
Date collected:	4/17/95	Sample size:	10.03 g	File:	F11603
Date received:	4/20/95	Matrix:	Soil	Ret check:	F11601
Date extracted:	4/25/95	Origin:	Site G	Daily cal:	F11602
Date analyzed:	5/15/95			Initial cal:	F052394C

Specific analytes	Conc (ppb)		TEF		TEQ (ppb)
2,3,7,8-TCDD	ND	x	1.000	=	•
1,2,3,7,8-PeCDD	ND	X	0.500	=	-
1,2,3,4,7,8-HxCDD	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDD	ND	X ·	0.100	=	-
1,2,3,7,8,9-HxCDD	ND	x	0.100	=	-
1,2,3,4,6,7,8-HpCDD	22.44	x	0.010	=	0.224
OCDD	219.93	x	0.001	=	0.220
2,3,7,8-TCDF	ND	x	0.100	=	-
1,2,3,7,8-PeCDF	ND	x	0.050	=	-
2,3,4,7,8-PeCDF	ND	x	0.500	=	-
1,2,3,4,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,6,7,8-HxCDF	ND	x	0.100	=	•
2,3,4,6,7,8-HxCDF	ND	x	0.100	=	-
1,2,3,7,8,9-HxCDF	ND	x	0.100	=	•
1,2,3,4,6,7,8-HpCDF	5.16	x	0.010	=	0.052
1,2,3,4,7,8,9-HpCDF	ND	X	0.010	=	-
OCDF	24.72	x	0.001	=	0.025

Total 2,3,7,8-TCDD toxicity equivalent (1989 ITEF): 0.521 ppb

Not all of the analytes have the same degree of toxicity, so it is convenient to express the toxicity of a sample as its equivalent 2,3,7,8-TCDD content. The concentration of each analyte is multiplied by the appropriate Toxicity Equivalence Factor (TEF), and the individual results of these calculations are summed to afford the 2,3,7,8-TCDD toxicity equivalent.

The 1989 International Toxicity Equivalence Factors are employed during these calculations.

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(COPY)
SUMMARY REPORT

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-2 SAMPLE ANALYSIS SUMMARY REPORT Lab Project: 95-291 Lab Sample: 3-91-9

Phone: (713) 972-1037

Fax: (713) 784-1152

Specific analytes	Sam	ple	Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.10	ND	2.32	93%	50-150

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-4 SAMPLE ANALYSIS SUMMARY REPORT Lab Project: 95-291 Lab Sample: 3-91-10

Phone: (713) 972-1037

Specific analytes	San	rple	Blank Lab spike			
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.11	ND	2.32	93%	50-150

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-6

SAMPLE ANALYSIS SUMMARY REPORT Lab Project: 95-291 Lab Sample: 3-91-1

Phone: (713) 972-1037

Specific analytes	Sample		Blank		Lab spike	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.05	ND	2.32	93%	50-150

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-8

SAMPLE ANALYSIS SUMMARY REPORT Lab Project: 95-291 Lab Sample: 3-91-2

Phone: (713) 972-1037

Specific analytes	Sam	Sample		Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.08	ND	2.32	93%	50-150

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-10

SAMPLE ANALYSIS SUMMARY REPORT Lab Project: 95-291 Lab Sample: 3-91-3

Phone: (713) 972-1037

Specific analytes	Sam	ple	Blank Lab spike		Lab spike	е	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits	
2,3,7,8-TCDD	ND	0.03	ND	2.32	93%	50-150	

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-14 SAMPLE ANALYSIS SUMMARY REPORT Lab Project: 95-291 Lab Sample: 3-91-4

Phone: (713) 972-1037

Specific analytes	Sam	ple	Blank Lab spike		spike	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.06	ND	2.32	93%	50-150

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 1613

Client Project: 8168 Client Sample: CSH-16 SAMPLE ANALYSIS SUMMARY REPORT Lab Project: 95-291 Lab Sample: 3-91-5

Phone: (713) 972-1037

Specific analytes	Sample		Blank			
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.002	ND	2.32	93%	50-150

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-18

SAMPLE ANALYSIS SUMMARY REPORT Lab Project: 95-291 Lab Sample: 3-91-6

Specific analytes	Sample		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.14	ND	2.32	93%	50-150

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ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-20

SAMPLE ANALYSIS SUMMARY REPORT Lab Project: 95-291 Lab Sample: 3-91-7

Phone: (713) 972-1037

Specific analytes	Sam	ple	Blank		Lab spike	
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	0.23	0.05	ND	2.32	93%	50-150

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-22 SAMPLE ANALYSIS SUMMARY REPORT Lab Project: 95-291 Lab Sample: 3-91-8

Phone: (713) 972-1037

Specific analytes	Sample Blank		Blank	Lab spike		
	Conc (ppb)	DL (ppb)	Conc (ppb)	Conc (ppb)	Rec (%)	QC limits
2,3,7,8-TCDD	ND	0.07	ND	2.32	93%	50-150

ANALYSIS REPORT

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-2 SAMPLE ANALYSIS

Lab Project: 95-291

REPORT

Lab Sample: 3-91-9

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received:

4/20/95 4/24/95 Sample size: Matrix:

Origin:

10.72 g Soil

File: Ret check: F11635 F11628

Date extracted: Date analyzed:

5/1/95 5/18/95 Site G

Daily cal: Initial cal:

F11629 F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.10		00:00	U

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168

SAMPLE ANALYSIS QC REPORT

Lab Project: 95-291

Phone: (713) 972-1037

Fax: (713) 784-1152

Client Sample: CSH-2

Lab Sample: 3-91-9

Date collected: Date received: 4/20/95

Sample size:

Origin:

10.72 a File:

F11635

4/24/95 5/1/95 Matrix: Soil

Ret check: Daily cal:

F11628 F11629

Date extracted: Date analyzed:

5/18/95

Site G

Initial cal:

F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDD	3.01	64.5	0.80	21:50	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.66	71.1	21:51	-

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	21:35	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occuring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occuring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168

SAMPLE ANALYSIS REPORT

Lab Project: 95-291 Lab Sample: 3-91-10

Phone: (713) 972-1037

Fax: (713) 784-1152

Client Sample: CSH-4

Origin:

File:

F11636

Date collected: Date received: Date extracted: 4/20/95 4/24/95 5/1/95 Sample size: Matrix:

10.45 g Soil

Ret check:

F11628 F11629

Date analyzed: 5/18/95 Site G

Daily cal: Initial cal:

F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.11	-	00:00	U

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-4 SAMPLE ANALYSIS

OC REPORT

Lab Project: 95-291 Lab Sample: 3-91-10

Date collected: Date received:

4/20/95 4/24/95 5/1/95 Sample size: Matrix: 10.45 g Soil

File: Ret check: F11636 F11628 F11629

Date extracted:
Date analyzed:

5/1/95

Origin:

Site G Daily cal: Initial cal:

F052394C

Phone: (713) 972-1037

Fax: (713) 784-1152

Conc (ppb)	% Rec	Ratio	RT (min)	Flags
3.32	69.4	0.83	21:52	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.76	73.5	21:53	•

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.87	21:37	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-6 SAMPLE ANALYSIS REPORT Lab Project: 95-291 Lab Sample: 3-91-1

Date collected: Date received: 4/20/95 4/24/95 Sample size: Matrix: 10.61 g Soil File: Ret check: F11624 F11622

Date extracted: Date analyzed: 5/1/95 5/18/95 Origin:

Site G Daily cal: Initial cal:

l: F11623 al: F052394C

Phone: (713) 972-1037

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.05			U

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-6 SAMPLE ANALYSIS
QC REPORT

Lab Project: 95-291 Lab Sample: 3-91-1

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected:

4/20/95 4/24/95 Sample size: Matrix:

Origin:

10.61 g Soil File: Ret check: F11624 F11622

Date extracted:
Date analyzed:

5/1/95 5/18/95 Site G

Daily cal: Initial cal: F11623 F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDD	3.76	79.8	0.76	21:47	

Cleanup standard	Conc (ppb)	% Rec	/	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.84	77.9		21:47	-

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.82	21:32	•

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-8 SAMPLE ANALYSIS REPORT Lab Project: 95-291 Lab Sample: 3-91-2

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received: 4/20/95 4/24/95 Sample size: Matrix:

Origin:

10.16 g Soil File: Ret check: F11625 F11622

Date extracted:
Date analyzed:

5/1/95 5/18/95 Site G

Daily cal: Initial cal: F11623 F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.08	-		U

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-8 SAMPLE ANALYSIS QC REPORT

Lab Project: 95-291 **Lab Sample: 3-91-2**

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received:

4/20/95 4/24/95 5/1/95 Sample size: Matrix:

Origin:

10.16 g Soil

File: Ret check: F11625 F11622

Date extracted: Date analyzed: 5/18/95

Site G

Daily cal: Initial cal:

F11623 F052394C

Conc (ppb)	% Rec	Ratio	RT (min)	Flags
3.97	80.7	0.86	21:50	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.20	89.3	21:51	-

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.85	21:37	-
!			

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occuring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occuring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-10 SAMPLE ANALYSIS

Lab Project: 95-291

REPORT

Lab Sample: 3-91-3

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received:

4/20/95 4/24/95 5/1/95 Sample size: Matrix:

Origin:

10.37 g Soil

File: Ret check:

F11626 F11622

Date extracted: Date analyzed:

5/18/95

Site G

Daily cal: Initial cal:

F11623 F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.03	-	00:00	U

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-10 SAMPLE ANALYSIS

QC REPORT

Lab Project: 95-291 Lab Sample: 3-91-3

Date collected:
Date received:
Date extracted:

Date analyzed:

4/20/95 4/24/95 5/1/95 5/18/95 Sample size: Matrix: Origin: 10.37 g Soil Site G

File: Ret check: Daily cal: F11626 F11622 F11623

Initial cal:

F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDD	3.54	73.5	0.81	21:49	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.03	84.1	21:50	-

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.78	21:35	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

IONICS INTERNATIONAL, INC. (800) 4-DIOXIN

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Phone: (713) 972-1037 Fax: (713) 784-1152

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-14 SAMPLE ANALYSIS REPORT Lab Project: 95-291 Lab Sample: 3-91-4

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received: 4/20/95 4/24/95

Sample size: Matrix:

Origin:

10.29 g Soil File: Ret check: F11627 F11622

Date extracted:
Date analyzed:

5/1/95 5/18/95 Site G

Daily cal: Initial cal: F11623 F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.06	-	00:00	U

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-14 SAMPLE ANALYSIS

QC REPORT

Lab Project: 95-291 Lab Sample: 3-91-4

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected:
Date received:

4/20/95 4/24/95 5/1/95 Sample size: Matrix:

Origin:

10.29 g Soil

File: Ret check: F11627 F11622

Date extracted:
Date analyzed:

5/1/95 5/18/95 Soil Site G

Daily cal: Initial cal:

F11623 F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDD	4.30	88.5	0.74	21:52	-

Cleanup standard	Conc (ppb)	% Rec	RT (min) Flags
37Cl4-2,3,7,8-TCDD	1.98	81.3	21:53 -

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.74	21:36	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 1613

Client Project: 8168 Client Sample: CSH-16 SAMPLE ANALYSIS REPORT

Lab Project: 95-291

Phone: (713) 972-1037

Fax: (713) 784-1152

Lab Sample: 3-91-5

Date collected: Date received:

4/20/95 4/24/95 5/1/95 Sample size: Matrix:

Origin:

10.48 g Soil

File: Ret check: J10846 J10838

Date extracted: Date analyzed:

5/23/95

Site G

Daily cal: Initial cal:

J10839 J071194

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.002	-		U

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 1613

Client Project: 8168 Client Sample: CSH-16 SAMPLE ANALYSIS

QC REPORT

Lab Project: 95-291 Lab Sample: 3-91-5

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received: 4/20/95 4/24/95 5/1/95 Sample size: Matrix;

Origin:

10.48 g Soil File: Ret check: J10846 J10838

Date extracted:
Date analyzed:

5/1/95 5/23/95 Site G

Daily cal:

J10839 J071194

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDD	3.07	64.4	0.81	23:03	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	2.25	94.2	23:04	-

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.78	22:52	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occuring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-18 SAMPLE ANALYSIS

Lab Project: 95-291

REPORT

Lab Sample: 3-91-6

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected:
Date received:
Date extracted:

4/20/95 4/24/95 5/1/95 Sample size: Matrix:

Origin:

10.25 g Soil File: Ret check: F11632 F11628

Date analyzed: 5

5/18/95

Site G

Daily cal: Initial cal: F11629 F052394C

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	ND	0.14	•	00:00	U

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-18 SAMPLE ANALYSIS
QC REPORT

Lab Project: 95-291 Lab Sample: 3-91-6

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected:
Date received:
Date extracted:

4/20/95 4/24/95 5/1/95 Sample size: Matrix:

Origin:

10.25 g Soil Site G

File: Ret check: F11632 F11628 F11629

Date analyzed:

5/18/95

Site G

Daily cal:

F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
		,	,		·
13C12-2,3,7,8-TCDD	4.24	86.8	0.65	21:45	-
		,			

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.95	80.0	21:46	-

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.80	21:31	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 SAMPLE ANALYSIS Lab Project: 95-291 Client Sample: CSH-20 REPORT Lab Sample: 3-91-7 Date collected: 4/20/95 Sample size: 10.4 g File: F11633 Matrix: Date received: Soil Ret check: 4/24/95 F11628 Origin: Date extracted: 5/1/95 Site G Daily cal: F11629

Specific analytes	Conc (ppb)	DL (ppb)	Ratio	RT (min)	Flags
2,3,7,8-TCDD	0.23	0.05	0.72	21:49	J

Initial cal:

F052394C

Phone: (713) 972-1037

Fax: (713) 784-1152

Date analyzed:

5/18/95

ANALYSIS OF POLYCHLORINATED DIOXINS/FURANS BY METHOD 8280

Client Project: 8168 Client Sample: CSH-20 SAMPLE ANALYSIS

QC REPORT

Lab Project: 95-291 Lab Sample: 3-91-7

Phone: (713) 972-1037

Fax: (713) 784-1152

Date collected: Date received: 4/20/95 4/24/95 5/1/95 Sample size: Matrix: 10.4 g Soil

File: Ret check: F11633 F11628 F11629

Date extracted:
Date analyzed:

5/1/95 5/18/95 Origin:

Site G

Daily cal: Initial cal:

F052394C

Internal standards	Conc (ppb)	% Rec	Ratio	RT (min)	Flags
13C12-2,3,7,8-TCDD	3.73	77.6	0.78	21:48	-

Cleanup standard	Conc (ppb)	% Rec	RT (min)	Flags
37Cl4-2,3,7,8-TCDD	1.95	81.3	21:49	-

Recovery standard	Ratio	RT (min)	Flags
13C12-1,2,3,4-TCDD	0.83	21:33	-

Recovery standards are added to the sample extract immediately prior to analysis by GC-MS. Recoveries of the cleanup and internal standards are determined by comparing peak areas corresponding to those standards with the peak areas corresponding to the recovery standards.

The cleanup standard is added to the sample extract prior to initiation of cleanup procedures. Loss of cleanup standard reflects losses occurring during cleanup. Generally, greater losses of cleanup standard occur when exhaustive cleanup techniques are employed.

Internal standards are added to the sample prior to extraction. Losses of internal standards reflect losses occurring during both extraction and cleanup. It is difficult to recover the internal standard (and the analytes) from some sample matrices. However, since the data reported have been corrected for recoveries, those data are accurate. Severe losses of internal standards may result in impaired detection limits.